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CENTRAL INTELLIGENCE AGENCY

## INFORMATION REPORT

C-0-N-F-I-D-E-N-T-I-A-L

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COUNTRY	North Korea	REPORT	
SUBJECT	[redacted] Report on the Electrical Industry in North Korea	DATE DISTR.	16 January 1957
DATE OF INFO.	[redacted]	NO. OF PAGES	1
PLACE ACQUIRED	[redacted]	REQUIREMENT NO.	RD
REFERENCES <i>Ref # 82</i>			

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THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.  
THE APPRAISAL OF CONTENT IS TENTATIVE.

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A detailed report on the electrical industry in North Korea

[redacted] The report consists of 176 pages and is divided into the following sections:

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2. Outline of Electrical Industry in North Korea
3. Transmissions and Transformer Facilities
4. Transformer Facilities
5. Power Plant Facilities
6. Curvelines of Water Capacity at Each Reservoir
7. Chart of Transmission Lines as of 31 December 1947
8. Supply of Electricity
9. Power Distributing Office, Chinnamp'o
10. Conditions at the Kangso Electric Machine Shop
11. Conditions at the Pyongyang Electric Bulb Factory
12. Regulations Governing Supply and Demand of Electricity

Attachment: [redacted] as described above. (Unclassified).

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(Note: Washington Distribution Indicated By "X"; Field Distribution By "#") Form No. 51-61, January 1953

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#### Foreword

Upon arrival in Pyöngyang, Your Commission had immediately mapped out a plan to start inquiries into the electrical industry in North Korea. But we found it exceedingly difficult to execute our plan due to the following facts:

- (1) Social order was in chaos and confusion.
- (2) All industrial plants were controlled by members of the Labor Party, who had occupied over 80 percent of the factory employees.

- (3) By the end of September or on the eve of their defecat, the Communists had secretly drove away a score of trucks full of important documents and charts from the various factories toward Kanggye, Supung, and other places after having burnt remaining records, including private papers, in order to destroy all basic data that were necessary to our work. Collection of data from any other sources was impossible.
- (4) The Communist baders threatened all staff workers and factory employees, numbering bundereds of thousands, to move to Kanggye and Manpochin with their families on foot.
- (5) A group of conscientious men, aloof from Red politics, returned from their hiding shelters, but because of the harsh control of peace squads, and the threatening propaganda of the Communist puppets, they contributed nothing to our work.
- (6) A large number of ambitious local people attempted to monopolize the electrical industry, and quarrelled among themselves. Thus the men from the Provincial Power Distributing Office, the City Power Distributing Office, the West Pyongyang Power Transmission Station, and the Municipal Electric Business Station stood face to face playing tricks against and pouring slander on each other, and interfered with the local electrical engineers in an effort to sabotage cooperation with Your Commission.
- (7) Another group, known as professional brokers and veteran appropriators, attempted to operate the electrical industry by themselves, and turned a deaf ear to our call for cooperation. Under these circumstances, we thought it best to restoredthe old Power control Bureau, but it was infeasible to reestablish a unified organization by breaking up these local groups.

We finally felt it absolutely necessary to see a strong counter measure he formulated by the related ministfy of South Korea in order to firmly establish a national policy of electricity as the national operation of the electrical industry in North Korea carried makred political color in all fields and resulted to a back-word condition in structure and personnel administration.

At the request of the Electric Commission of the UN Armed Forces, we were able to decide on the field for construction of a power plant with the assistance of five engineers from the old Electric control Bureau by 10 October in order to secere current for pumping drinking water in Pyöngyang. Afterwards, we also cooperated with the same UN Commission in the survey of suitable locations to install generators at independent power plants such as the Japan Corn Products Company and the "Kanebo" Factory in Pyöngyang, and the Powership in Chinnampö, and in the restoraction of power transmission lines which will induce current to all directions in Pyöngan-namdo.

We regret to say that our survey has made only a limited progress, because all major electrical facilities were mostly installed for ther in the northern areas still unliberated.

This report fails to become a complete source material, because we had to make survey hasitively in a period of great confusion, but we hope that it can be of some use in the establishment of a definite plan for electrical industry in North Korea.

In conclusion, we should add that this isurvey was conducted by a three-men party-Mr. YI Ta'e-chun, Bureau of Electricity, Department of Commerce and Industry; Mr KIM Hong-sik, Korea Power Supply Company (<sup>C</sup>hosön Chönöp) ; Mr YUN Chae-sin, Seoul Electric Company (Kyongjön or Keiden).

20 November 1950

Outline of Electrical Industry

in

North Korea

Operation of Electrical Industry  
in North Korea

After the liberation of August 1945, the People's Committee of North Korea combined the generating facilities of the old Korea Power Supply Company (Chosön Chönöp) together with the receiving and distributing equipments of two other companies, ie, the North Korea Electric Union (Puksön Haptong), and the West Korea Electric Union (Sösön Haptong). Then this committee nationalized the operation of the electrical industry under the control of the Office of Electricity, Bureau of Industry, and reorganized its structure into three independent plants - Power Generation, Power Transmission, and Power Distribution.

To generate and distribute electricity, the People's Committee carried out the following plan:

- (1) Establishing the Höchön-gang Power Department by combining the two plants at Höchön-gang and Puryöng in order to manage generation and transmission of electricity in the North-eastern area through the control of chief transformer substations of power plants other than those with a capacity of transmitting above 110 KV, and all independent power plants of home use at special factories located in that area.
- (2) Establishing the Changjin-gang and the Puchöng-gang Power Department to manage generation and transmission of electricity in the Hwangnam area.
- (3) Establishing the North-east Power Distributing Department, with branches at Chöngjin, Najin, Pukchöng, Tanchöng, Hamhung, and Wönsan to manage operation of all facilities for transmitting, transforming, and distributing electricity above 66 KV in the North-East Area and in one part of Kangwon-do.

- (4) Establishing the Central Power Supply Department by combining both undertakings of the Kungangsan and the Hwachon Power Plants to manage generation, transmission, and distribution electricity for the Kangwon-do Area.
- (5) Establishing an independent Sup'ung Power Department at the Sup'ung Power Plant to manage generation of electricity in the North West Area.
- (6) Establishing the West Power Transmission Department as a controlling organ (with headquarters at the old Korea Power Supply Company's Pyongyang Power Transmission Office) to supply electricity, generated in the North-East Area and in Sup'ung, to operate high voltage transmission lines and transformer substations which will supply electricity to South Korea, and to manage operation of high voltage transmission and ~~transm~~ transformation facilities in the North East and North West.
- (7) Establishing the North-West Power Distributing Department, with branches at Pyongyang, Pyongan-namdo, Nampo, Kanggye, Sinuiju, and Haeju to Manage Operation for Transmission, transformation, and distribution of electricity below 66 KV,

As a whole, the electrical industry of North Korea was operated by the above system from 1946 to 1948 (September). But the following independent power plants, with their transmission lines and transformer substations, were placed under the direct control of several specialized organs at the Bureau of Industry.

Names of independent powerplants; the Hungnam Fertilizer Factory; the Aoji Synthetic Oil Factory; The Songjin Steel Mill; the Chongjin Textile Mill;

the Hwanghae Iron Mill; the Kangsøn Steel Mill; the Pukch'ong Machine Shop; the Namp'o Refinery; the Namp'o Light Metal Factory; and other power plants at important factories and mines. These national industrial plants were primarily controlled by the office of Electricity, which saw to it that contracts were signed with other factories and industrial plants and electric power was supplied.

By way of carrying on operation, each plant also exercised police control for electric security in addition to its administrative duties for business enterprise, while at the same time, the office of Electricity made appropriations for each plant with the receipt of the Electric Distribution Department.

The Office of Electricity consists of two departments - Electric Power and Electrical Industry. In the field of electrical industry, the old West Union Electric Repair Shop was expanded into an independent plant, called "The Pyongyang Electric Machine Plant, where general repairs of electric tools as well as production of everyday electrical supplies were done,

In the meantime, the Kangsø Shop of the old Korea Iron Mill was also enlarged into an Electric Mill, where they started production of everyday electrical supplies.

The operation structure of electric power is as follows:

Bureau of Industry -

Office of Electricity

Director

Vice-Director

Department of Power Generation

Power Generation Section

Engineering Section Communications Section

Department of Power Transmission and Power Distribution.

    Transformer Section

    Power Transmission Section

    Electric Power Section

D   Department of Electrical Industry

    Industrial Section

    Tools and Machinery Section

Department of Planning

    Basic Construction Section

    Fund Planning Section

    Planning Section

Department of Accounting

    Budget Section

    Accounts Section

Department of Business Operation

    Business Operation Section

    Material Section

Department of Staff Workers

    Labor Section

    Staff Workers Section

    General Affairs Section

Department of Sup'ung Power Generation

Department of Höchön-gang Power Generation

Department of Changjin-gang Power Generation

Department of Puchön-gang Power Generation

Department of Central Electrical Industry

    Hwachön Power Plant

    Kümgangsan Power Plant

    Chörwön Office

Department of North-East Power Distribution

    Chöngjin Branch

    Hamhüng Branch

    Wönsan Branch

    Pukchöng Branch

    Najin Branch

    Tanchön Brancy - 10 -

Department North-West Power Distribution

Siniju Branch

Pyongan-namdo Branch

Pyonggang Branch

Nampo Branch

Haeju Branch

Kanggye Branch

Department of North-West Power Transmission

Pyongyang Transformer Substation

Choch'on Transformer Substation

Nampo Transformer Substation

Tasado Transformer Substation

Unsan Transformer Substation

Namch'on Switch Station

Songyang Switch Station

Pyongyang Streetcar Business Office

Pyongyang Electric Bulb Factory

Pyongyang Electric Machine Plant

Kangsø Electric Machine Plant

\* \* \*

They collected scrap silicon steel plates, and used them in the production of pole transformers ( 5 or 6 single-phase transformers of 10 KWH - Japanese Production Type).

Since no Silicon Steel is produced in North Korea, they transported 30,000 KVA iron cores of major transformers at the Tongnogang Power Plant of the old Korea Power Supply Company, which had imported them via Shibaura from Mecca (sic), but due to improper storage, and leakage of water, these articles gathered rust.

Sometime afterwards, these were transported to Pyöngyang and were wasted in the production of crude transformers and infant tools.

By and by, they found it difficult to install transformers at the Tongno-gang Power Plant to meet the demands of the Two Year People's Economic Plan (1949 - 50). Therefore, they ordered transformers from the Soviet Union.

Judging from these facts, it is apparent that production of electrical supplies in North Korea was economically unprofitable and technically impossible, if not only a propaganda. Then, for the production of electric bulbs, they took over private Plants, including the Taemyöng Electric Bulb Factory, together with several glass factories of private undertaking, and they established a national electric-bulb plant where they produced about 600 electric bulbs of the Japanese type by using filaments that had been kept in stock during the Japanese regime. In the meantime, they struggled in raw materials for glass works from South Korea via blackmarketeers, and produced some crude electric bulbs with 100 hours of life. By controlling this electric bulb plant, they were able to operate the gas supply works in Pyöngyang.

Next, for the operation of streetcars in Pyöngyang, they separated the streetcar Section from the old West Korea Electric Company by changing its name as the Pyöngyang Streetcar Business Office, and ordered it to take over the whole business of running the streetcars.

The electrical industry was operated by the above system on the basis of a separate account. Accordingly, the National Treasury disbursed only such funds as deemed absolutely necessary for the investment in the expansion of production, with a definite burden of output to satisfy the standard consumption, which resulted in the guarantee of quantity rather than quality. However, they failed to accomplish the original plan. For example, many industrial plants, including the Kangsö Electric Machine Plant, proved to be a losing business and had to cover their red letter with the receipt from the Department of Electric Power.

Immediately after the liberation, all Japanese engineers left power plants, but up to the birth of the People's Republic the Office of Electricity continued operating the electrical industry in North Korea, except in Hamgyǒng-bukto where the electrical facilities had suffered the heaviest damage during the Korean War.

New Installation:

3 (Transformers?)

1 (Transformer?) of 5,000 KVA at the 2nd Generator, Changjin-gang Power Plant; 28 Km. Transmission Line (66 KV) between Changjin-gang and Hamhŭng; 3 (Transformers?) of 750 KVA at the 2nd Substation, 1 (Transformer?) of 5,000 KVA Hamhŭng;

2 (Transformers?) Of 4,000 KVA at the 2nd Substation, Ch'ǒngjin; Erection of a new substation with one transformer of 110 KV - 40,000 KVA, and one transformer of 12,500 KVA at Kilchu Paper Mill; 4 Km. Transmission Line (110 KV), and one transformer of 110 KV - 34,000 KVA at Yongs'ng Substation;

In addition, 30 old substations, with transformers of medium and small sizes, were erected in other places to use electric power.

\* \* \*

To supply more electric power to Wǒnsan and Kangwǒn-do areas, they started erecting, in September 1946, a new substation by assembling a three-phase transformer (154 KV, 66 KV, 22 KV - 40,000 KVA), which had arrived via Shibaura from Mecca (sic) for the construction of a light metal factory (Sumitomo) at Munpyong. But hardly the assembling of the transformer was finished in November of the same year before the Soviet Army carried off this transformer of 40,000 KVA, interrupting the construction of the substation in question.

It was not until June 1947 that another three-phase transformer (154 KV, 66 KV - 15,000 KVA) was transported from Kanggye (wither it had been removed from Unsan during the Korean War), and was installed in Munpyong after having reporudced its rusted iron core, and assembled all its dismantled parts. This was a great Success for the supply of more electric power, and for the establishment of a new plan connecting the two power supply systems - Hwachon and Changjin-gang.

To keep a balance of water level at reservoirs in the North East, the Höchön-gang system was greatly limited in generation of power. Naturally, its paralysed the reception of electricity at the two substations (220 KV) - in Chongjin and in Yonghung, and the restoration of a transformer (220 KV - 100,000 KVA) at the Chongjin Substation was urgently required. Therefore, a spare transformer of 100,000 KVA was moved from Chinnampo to Chongjin, where its installation work was commenced in September 1947 and was completed in November 1948. As a result, it was possible to normally supply current by 220 KV to areas, north of Chongjin, and by 110 KV to factories in Kilchu, Söngjin, and Aoji.

In the meantime, in ordet & to increase generation of electricity at the Höchön-gang system, the Hungnam substation was erected by using two transformers (200/11 KV- 80,000 KVA) at the East Hungnam Substation, and adding five circuit lines out of the already installed connecting line of 11,000 V, thus supplying an average 100,000 KW to the Hungnam Fertilizer Factory, while maintaining the balance of the water level by increasing generating at the Höchön-gang, and diminishing the same at the Puchon-gang.

The decayed water mill bucket on No. 1 Generator at the Puchon-gang Power Plant was replaced by a new bucket, produced in North Korea after liberation. Butipartly due to its uneven balance of weight to a dangerous point, and partly due to the necessity of supplying water for irrigation on the Hamhung Plain, this new bucket accomplished an insignificant working efficiency, and at normal times, it was only employed in a limited generation of power for the use of industrial plants in the Hungnam Area.

The transformer of 80,000 KVA at the Yonghung Substation, which had been receiving current from the Hochon-gang via the East Hungnam connecting line of 220 KV, was accidentally burnt during a filtering operation with insulator oil immediately after the liberation, and it was impossible to receive current from the Hochon-gang system. Therefore, it was decided to transport a three-phase transformer (220/33 KV - 70,000 KVA) from the Showa Denko, an old Japanese electric plant in Chinnampo, in order to have it installed at the Yonghung Substation, and they succeeded in recoiling the secondary electric pressure into 11,000 Kv, insulating taping, and assembling the whole set.

But, while installing the transformer tank and the oil pipe cooling apparatus, the test with water pressure ended in failure because of the weakness of the tank, and this test was not completed until 25 June 1950.

In the North West Area, work had also started to remove, add, and erect transformers following the increased production of electricity since 1946 up to 1947. Thus the Inhung Substation (10,000 KVA) is being expanded to supply more current to Pyongyang; the Central Substation at Siniju (15,000 KVA) is being newly erected; the existing transmission line (at 22 KV) between Choch'on and Taeharyong is being reinforced up to 66 KV; the transmission line (220 KV) between Supung and Choch'on has changed its route along the new basis of the Chongchon-gang from Yongmi-to Sukchon (17 Km.). The construction of the last mentioned project was started in April 1947 and was completed in October 1948.

In erecting new iron towers, they assembled old materials, which the Japanese had imported via Shibaura from Mecca (sic), although these were different from the existing materials in type and in the method of laying out the elevated and ground cables. While, at the same time, various new installations

restorations, and improvements were accomplished at the No. 1 Substation (15,000 KVA), PYöngyang, and at other power plants, major factories, and mines.

At this juncture, one event of political significance happened, i.e., in December 1945, the Soviet Army dismantled two generators and two transformers of 100,000 KVA, at the Supung Poer Plant, and had them transported to the Soviet Union. In dismantling these equipments, they cut the shafts of the generators in the middle, and also cut the casings in the middle by using oxygen.

Since the Liberation up to the first part of 1948, the facilities for the production of electricity were restored, and the power generation during that period was reported as shown on the separate table. As for the use of electricity, the burden of the electric heat and the electric boiler in major industrial plants occupied the lions share of the power generated as compared with other uses at ordinary factories, including chemical plants.

In the cost accounting, the production of electricity was much cheaper than that of coal, and since the stopping of electric supply to South Korea, the rich hydro electric power was freely used in all fields in North Korea to prevent the flooding of reservoirs. As a result, disregarding the economic advantages in using coal, they invested large amounts of capital in the various electrical installations without paying attention to the conservation of electricity. Therefore, although the North Korean propaganda boasted low cost of electricity, it does not agree with facts. For instance, in the zinc refinery, the per ton consumption of electricity reached to 6,000-8,000 KWH as compared with 4,000 KWH, which is the basic volume of the past, while the managers at the industrial plants installed superfluous electrical apparatus under the pretext that electricity is only a minor item in the cost accounting, and thus wasted power in large amounts for their small productions.

The restoration period of 1946 - 1947 had past, and from 1948 they entered upon a new period of expansion of production, which naturally looked on electricity as one of the major problems. Therefore, early in 1948, the supply of electricity was much limited by cutting the electric heating at private homes in order to increase the same at industrial plants.

With the creation of the People's Republic, in the meantime, the Bureau of Industry was changed to the Ministry of Industry, and its several Offices to Bureaux under the new Ministry. Then North Korea was divided into two areas - the North-East and the North-West to facilitate the distribution of electricity, while the existing distributing branches were promoted as independent industrial plants in accordance with the new structure:

(As of November 1948)

Ministry of Industry -

Control Bureau of Electricity

- Sup'ung Power Department
- Hoch'on-gang Power Department
- Changjin-gang Power Department
- Puch'on-gang Power Department
- Kangwön Power Department
- Sonüiju Power Distributing Dept.
- Pyöngnam Power Distributing Dept.
- Haeju Power Distributing Dept.
- Pyöngyang Power Distributing Dept.
- Kaggye Power Distributing Dept.
- Nampo Power Distributing Dept.
- Wönsan Power Distributing Dept.
- Hamhüng Power Distributing Dept.
- Chöngjin Power Distributing Dept.
- Tanch'on Power Distributing Dept.
- Kangsö Electric Machine Plant.
- Pyöngyang Electric-Bulb Factory
- Pyöngyang Streetcar Business Office
- North-West Electric Transmission Dept.

**Remarks:** The power distributing branches under the old Kangwön Power Department has been incorporated into the Wönsan Power Distributing Department, and the Pyöngyang Electric Machine Plant into the Kangsö Electric Machine Plant.

**Electric Power Generated****Year**

1946	3,942,806,831 KWH
1947	5,576,798,716 KWH
1948	6,130,827,752 KWH
1949	5,942,121,340 KWH
1950 (End of May)	1,765,096,800 KWH (First Quarter)

**Supply to China (Average electric Power)**

1946	510,985,742 KWH
1947	389,457,824 KWH
1948	545,333,361 KWH
1949	595,467,526 KWH
1950	220,112,441 KWA (First quarter)

Under this new structure, the business operation continued as before, and the independent industrial plants, engaged in the distribution of electricity has been able to control the security of electrical establishments, and to execute the general business with good effects.

To accomplish the People's Economic Plan of 1948, more than 1,000,000 KW of electric power was required by the various factories and mines. Therefore, a decision was published in order to prohibit the non-productive use of electricity. This decision was carried out most effectively from the second part of 1948 up to 1949, and even the industrial plants throughout North Korea had to replace their electric boilers for coal boilers since the first quarter of 1950, leaving a surplus of 100,000 KW. of electricity, and since the stopping of supply of electricity to South Korea an order was issued to the effect that the power generated at the Hwachon Substation be used at its maximum. Accordingly, on 20 November 1948, one circuit transmission line of 55 KW/ was erected between Sorubang and Wiik, a distance of 36 KM, and started supplying current at an average of 7,000 KW. or at a maximum of 10,000 KW. to all mines

in the areas of Wönsan and Iryöng.

To electrify railroads of the Pyöngyang-Wönsan Line and the Pyöngyang-Manpö Line, two sections between Yangdok and Ch'onsöng (52 KM/Ø, and between Kupyön and Koin (27KM.) were selected with a plan to instal electrical apparatus thereon by using four sets of mercury-vapor rectifiers transported from ambang and Pokkye (leaving only one set each at the original places); two rotary-converters transported from Yangjiri, Kümgangsan whither they had been moved for safety; trolley wires kept in stock, imported from the USSR, and produced at the Söngjin Steel Mill, an addition to collected or home-made electrical parts such as metal fixtures, insulators, electric wires, and the supports for the instruments at the substations.

The Control Bureau of Electricity, Ministry of Industry, took charge of the design and the engineering operation for all installations of transmission lines and transformer substations, while the Bureau of Electricity, Ministry of Transportation laid out trolley wires. To assist the construction, more than a ten thousand people, including engineers, technicians, laborers, and office-workers, had been drafted a day during the whole process. Work commenced in September 1948, and completed in January 1949 in a bad condition, for haste made waste in many parts of the construction, which needed many repairs afterwards.

The greatest technical difficulty was the connection of trolley wires, and the equipment of filters for the prevention of obstruction to the induced communication lines, the detailed description of which is omitted, and we here only show the outline of results of this construction.

(1) Pyöngyang - Wönsan Line

- (a) New transmission facilities for the supply to current to the electric railroad.

<u>Name of transmission Line</u>	<u>Section Length</u>	<u>Number of Circuit lines</u>	<u>Electric Wire</u>	<u>Support</u>	<u>Wire Voltage</u>
Sökt'ang Transmission Line	Inpyögn-Sökt'ang	18	1	Haed, bare copper 7/2.6	Wood 66 KV
Kangpyöng transmission Line	Inhüng Kwanpyöng	28	1	"	" "
R.R Connection Transmission Line	Sökt'ang-Kwangyöng	27	1	"	" "

## (b) Transformer Equipments

<u>Name of Substation</u>	<u>Transformer</u>	<u>Mercury-Vapor Rectifier</u>	<u>Remarks</u>
Sökt'ang Spa Substation	66/22 KV 34 4,000 KVA X 2	PC 3,000 4,000 KVA X 2	Transported from Pokkey
Kwanpyöng Substation	66/22 KV 34 4,800 KVA X 2	PC V 3,000 4,000 KVA X 2	Transported from Sambang

## (2) Pyöngyang-Manpo Line

For transmission facilities, a substation, directly branching off from the existing Unsong Transmission system, has been established.

For transformer facilities, three transformers of 66/11 KV, 900 KVA, and two transformers of rotary deflectors and 11,000 VBC, 750 V with a capacity of 750 KVA, have been installed.

Since the electric locomotive is of 1,500 V, two rotary deflectors are directly attached at all times to haul the train more easily.

The filter equipments for the prevention of obstruction to the induced communication lines were produced at the Kangsö Electric Machine Plant as the transportation of these machines from Pokkye was impossible, and a new design was made to produce the flank balance resistors of 3,000 V, with direct current at the same plant, but there was a great loss of electric power in their making, for they used the water resistance.

As the flank feeding wire with direct current required a capacity of 3,000 A, two steel-core if aluminum wires (400 mm<sup>2</sup>) were used, and a suspension-type insulator (254 M/M) is also being used.

In this way, they had poured their energy into the electric railroad and saw its completion in four months by compultory labor.

Under the tow year People's Economic Plan (1949 - 50) the Tongno-gang Power Plant Construction Office was established and work was immediately started for a basic construction with a view to generate about 20,000 KW. during the rainy season in July 1950. But, due to an urgent repair on the north epron of the Sup'ung Dam under a Soviet, Plan, the Tongno-gang Construction dropped behind, and the transmission line construction (154 KV) between Hwach'on and Munpyöng was concelled. Moreover, a 27 percent cut was announced on all repairs of the existing electrical facilities, and only 15,000 wood-poles, out of 30,000 poles plannned, were produced.

In the meantime, war-damaged steel pipes, two generators of 8,600 KVA, and three transformers of 63/66 KV, 5733 KVA at No. 1 Power Station, Puryöng, were completely restored in November 1948 (work started in September 1947) by new production and repair of machines, enabling generation of electricity once again. Then a new plan was made to restore-two more generators of 6,000 KVA at its No. 2 Power Station, and work started early in 1949, but the generators were so badly damaged that was ones, including shafts and iron cores, bad to be produced at the Kangsö Machine Plant. The basic test with elecgriicity was found good, but no text with its mechanical strength was made, because the shafts of the generators bent in S shape with the upper and lower thrust metals badly burnt, making it impossible to work, and up to June 1950 no perfect generation and of elecgriicity had commenced.

Another important basis construction was the building of an iron railroad bridge, spanning the Tuman-gang to maintain a huge transportation strength between Korea and the Asiatic Soviet Russia across that frontier river, and work had already been undertaken.

In this connection, a substation was required to supply 2,000 KW of power for this gigantic engineering, 2,000 KW of power for revolving this iron bridge and railroad locomotives. - or a total of 4,000 KW to 5,000 KW of electricity. Accordingly, the Ch'okchi Substation changed its capacity of 22 KV into 66 KV, and work started in April 1950 to lay out 28 KM of transmission lines of 66 KV. But this project was suspended when they had proceeded with erecting 30 percent of poles for the transmission lines.

For the preparation of the Korean War, the expansion of production in all factories and mines was deemed necessary and especially the Soviet engineers made mine prospecting tours throughout North Korea in order to transport increased production of lead and monazite ores to the Soviet Union.

In consonance with the Soviet Plan, the North Korean regime issued a cabinet Decision to see that the equipment of substations for greater supply of current be executed with rapidity. Accordingly many transmission lines and transformer substations were erected at the Kyesaeng Mine, the Ch'olsan Mine, the Samch'on Mine, the Yllim Mine, the Nagy'on Mine, and the Söngch'on Mine, and other lead producing mines.

During the year of 1950, more power installations supplying electricity for emergency use were urgently required, and the strengthening of generation and transmission activities was repeatedly called upon in order to utilize 100 percent of all electrical resources. Under these circumstances, reorganization of the Control Bureau of Electricity and its affiliated industrial plants was carried out so execute a more effective operation in all fields of electricity.

The revised structure is as follows:

Ministry of Industry-

Control Bureau of Electricity

Sup'ung Power Department  
Changjin-gang Power Department  
Puch'on-gang Power Department  
Hoch'on-gang Power Department  
Pury'ng Power Department  
Hwach'on Power Department  
Kumgangsan Power Department  
West Transmission Department  
East Transmission Department  
Pyongan Distribution Department  
Pyongan-namdo Distribution Department  
Pyongan-bukto Distribution Department  
Hwanghae-do Distribution Department  
Chagang-do Distribution Department  
Kangwon-do Distribution Department  
Hamgyong-aamdo Distribution Department  
Hamgyong-bukto Distribution Department  
Kangsø Electric Machine Plant  
Pyongyang Electric Bulb Factory  
Pyongyang Street-car Business Office  
Kangsø Electrical Research Institute

It is to be noted that one distribution department was organized for each province as a unit as in the case of the administrative system; each generating system has become an independent organ; The transmission system has been divided into two departments - the East and the West; the transmission and transformer facilities of 11,000 KV. under the control of the former Distribution Department, have been transferred to each department of transmission and distribution; the Distribution Department controls only minor stations with less than 3,300 V., and chiefly executes business functions.

Control Bureau of Electricity

Director

Chief Engineer:

Generation Department  
Transmission Department  
Electrical Industry Department  
Basic Construction Department  
Central Distribution Department  
Oil and Fat Experimental Department  
Power Developing Department  
Central Communication Department  
Central Electricity Readjusting Department  
Central Electro-meter Inspection of Repair Department

Vice-Director:

Material Supply Department  
General Affairs Department  
Business Department  
Labor Department  
Staff Department  
Financial & Accounting Department Planning Department

The above is an outline of the electrical industry in North Korea up to 25 June 1950. After the outbreak of the Korean War all factories in North Korea were transferred to munition plants of manual labor, and the planned production had gradually decreased. Especially, following bombing of major factories at Hungnam, Söngjin, Chöngjin, Chinnampo, Wönsan, etc., since 23 July, the total electric power of 700,000 KW or 800,000 KW had dropped to only 10,000 or 20,000 KW. by the middle of September of the same year. Therefore, in order to minimize the damage from bombing, more than 50 percent of the generators and transformer equipments at the power plants was dismantled and moved to other places of safety.

Because of severe bombing, however, the transmission lines of 220 KV between Supung and Chochon had suffered a big damage, and its reception of power had become impossible, and since the destruction of the Pyongyang Substation, the reception of 1954KV from Changjin-gang also became impossible, so it received only about 6,000 KW from Changjin-gang through the transmission line of 66 KV, and made limited supplies to the North-West Area.

By that time, all industrial plants in North Korea had been completely destroyed except a few factories where infant weapons were produced by manual labor. Moreover, the Sup'ung transmission line of 220 KV was repeatedly bombed near Sinanju, and the Sup'ung Power Plant supplied only about 8,000 KW to Tasato and (?) KW to China.

After five major factories at H'ungnam were bombed out, and production activities in that area had been paralysed, the Puch'on-gang and the Changjin-gang Systems were obliged to suspend generation, while only one generator of 40,000 KVA at No. 1 Power Station, H'och'on-gang, continued its supply to the North-East and the North-West.

In other words, the generation facilities in North Korea, as a whole, had lost their capacity of production due to terrific bombing.

The following table shows bombing damages suffered by the principal power divisions:

<u>Locations</u>	<u>Equipments damaged</u>	<u>Capacity</u>	<u>Quantity</u>	<u>State of Damages</u>
H'ungnam Power Plant	Principal Transports	50,000 KVA	7	Complete ruin; Repair impossible.
"	Rotary converters	,3,500	30	Seven repairable
Ch'ongjin Sub-station	Transformer	100,000	1	
"	"	20,000	1	All burnt
"	"	15,000	1	Destroyed burnt
Pongung Sub-station	"	20,000	1	"
"	"	5,000	1	"
"	"	34,500	2	"
S'ongjin Substation	"	10,000	3	"
Yongh'ung Substation	"	60,000	2	"
Aoji Substation	"	34,500	1	(Tank damaged by rifle bullets.)
Chinnamp'o Substation	"	100,000	1	All burnt

Pyongyang Substation (No. 2)	Transformer	100,000	2	Parts burnt One repairable
Pyongyang Substation (No. 1)	"	15,000	6	All burnt there repairab
Kilchu Substation	"	3,333	1	Parts damaged by machine- gun bulletz.
Puchon-gang Power Plant (No. 1)	Generators	36,000	2	Coil damaged in One; Casing damaged in one
"	Transformer	36,000	1	Destroyed and burnt
""	"	350	2	"
"	Wire Ropeway (No. 5)			No. 5 & 6 Blocks destr- oyed.
Changjin-gang Power Plant (no. 1)	Transformer Blowout Coil of arc light	40,000	1	

As reported in the above, all transformer instruments of 110 KV class had been destroyed from bombing up to the end of September, not to speak of countless instruments of 66 KV class, and although some Transformer facilities had escaped bombing the power transmission was inactive because of the total destruction of factories.

Immediately after the Liberation by the UN Armed Forces, electricity was absolutely required for the maintenance of peace and order, and for the restoration of peace industries.

It would be exceedingly difficult to restore power equipments in a short time, but at least an expaustive survey and checking should be carried out inorder to protect all remaining equipments from further damage.

At present, if the coolers on the ~~max~~ principle transformers at the Pyongyang Substation (No. 1) is being frozen to a point of explosion for lack of proper care; the multiple-phase machines of 10,000 KVA and their insulators are gathering rust underground;

the principal metal-parts and coils are buried rotting in soil, but no mechanical protection is extended; the various electric tools and machinery at their hiding shilters are also in rust, for the absencd of any caring hand.

Far from establishing an overall counter-measure for protection of these machines, only a local plan is being adopted to utilize electrical power by operating diesel generators of minor capacity. This method is ineffective unless a thoroughgoing repair is made on the transmission lines and transformer instruments.

We regret that there is no organized structure to preserve and protect the warform power equipments scattered all over North Korea. Therefore, we suggest that a definite plan be formulated by the competent authorities of the Republic of Korea as soon as possible in order to save the remaining electrical properties in our newly liberated territory.

**Transmission and Transformer Facilities  
(Additions and Removals)**

**November 1950**

STATISTICS OF SUBSTATIONS

<u>Items/Substations</u>	<u>22 KV No. Cap.</u>	<u>154 KV No. Cap.</u>	<u>66 KV No. Cap.</u>	<u>22 KV No. Cap.</u>	<u>Total No. Cap.</u>	<u>Re- marks KVA</u>
New installation	1	15,000	15	67,260 23	13,126 39	75,386 KVA
Additions	1	100,000		15 69,110 7	10,970 23	180,080 KVA
Removals				11 30,580 11	7,500 22	38,080

Statistics of Transmission Lines

<u>Items/ Voltages</u>	<u>110 KV</u>	<u>66 KV"</u>	<u>32 KV"</u>	<u>11 KV</u>	<u>Total</u>	<u>Re- marks</u>
Additions	4 Km	104 Km	308.3 KM		416.3 KM	
Removals		91 Km	128.6 Km		219.6 Km	

Comparison with figures of 15 August 1945

As of 15 August 1945:

- (1) Number of Substations ..... 276  
Total capacity ..... 1,366,560 KVA
- (2) Percentage of number of Substations.
  - A. New installations ..... 14.1 percent
  - B. Removals ..... 8.3 percent
  - C. Additions ..... 8.3 percent
- (3) Percentage of voltages
  - A. New installations ..... 7 percent
  - B. Removals ..... 28 percent
  - C. Additions ..... 13 percent

Survey of Substations (Since 15 August 1945)

<u>Name of Substations</u>	<u>Voltage &amp; Capacity</u>	<u>Kind</u>	<u>Date of Work Completion</u>	<u>Remarks</u>
Saengjang	66/33 100x3	New	November 1949	for Saw Mill
Nanam	66/33 1000x4	"	October 1948	General Supply
Kwanpyöng	66/22 4000x1	"	January 1950	Electric Railroa
Pyöngyang	22/33 100x3	"	August 1947	General Supply
Hamhung (No.2)	66/33 1500x4	"	October 1947	Electric Heat & General Supply
Sögwangsa	22/33 200x4	"	September 1949	General Supply
Kojin	22/33 200x3	"	July 1948	Recreation
Changjön	66/22 1500x4	"	August 1949	General Supply
Chörwön	22/33 200x3	"	October 1946	"
Chökchi	22/33 500x3	"	April 1948	Water Pumping
Pyölnha	66/33 500x2	"	October 1946	General Supply
Kuhyön	66/11 900x3	"	January 1949	Electric R/R
Samgang	66/33 75x3	"	December 1946	General Supply
Kyesaeng	22/33 200x6	"	June 1950	Mines (Lead)
Paengnyang	22/33 300x3	"	September 1949	Mines (Monazite)
Charyöngwan	66/33 300x3	"	June 1950	Mines (Monazite)
Chölsan	22/33 200x3	"	December 1949	"
Puryöng	22/33 100x3	"	December 1949	"
Sinüju Central	66/33 500x3	"	August 1947	General Supply (Factories)
Toksan	22/33 200x3	"	April 1948	Water Pumping
Yöndo	22/33 200x3	"	October 1948	"
Chöngsan	22/33 200x3	"	November 1949	General Supply
Yangchön	22/33 200x2	"	March 1948	"
Unsan	22/33 200x3	"	October 1948	General Supply
Haeroe	22/33 200x3	"	June 1949	Water Pumping
Sinsöngchön	22/33 200x3	"	March 1949	Mines (Zinc)
Wölli	22/33 100x6	"	June 1948	Mines (natural Cokes)
East-Pyöngyang	66/11 12500x1	"	December 1949	General Supply
	66/33 1500x1			
Tongchhangpo	22/33 100x6	"	April 1946	Water Pumping
Pungnyul	22/33 300x4	"	September 1948	"
Samchön	55/12 750x4	"	September 1950	Mine (Gold, Lead Nagyön Mine)
Söchön	12/33 300x2	"	May 1947	Water Pumping
Chungsan	22/33 100x2	"	May 1947	Water Pumping
Chinchiyön	66/33 500x3	"	October 1948	General Supply
Pungchöng	22/33 200x3	"	May 1947	Water Pumping
Mundong	22/33 100x2	"	May 1947	General Supply
Sökt'ang Spa	66/22 400x1	"	January 1949	Electric R/R
Anju Coal Mine	66/33 1500x4	"	October 1948	Mine (Coal)
Munpyöng (154 KV)	154/66 15,000x1	"	March 1948	Power (Factory) Due to
Undong	22/33 100x3	Removal	May 1947	Abandon of Undong Mine
Undong	22/33 300x4	"	May 1948	"
Wanpung	66/33 300x4	"	October 1948	"
Paengnyang	22/33 200x3	"	October 1947	"
Ipsök	22/33 200x3	"	May 1950	Construction of New Substation (66 KV) at Anju Coal Mine
Odong	22/33 200x3	"	October 1949	Abandon of Odong Mine
Yudong	22/33 100x3	"	September 1949	Change of Line (50-22 KV)

<u>Name of Substations</u>	<u>Voltage &amp; Capacity</u>	<u>Kidd</u>	<u>Date of Work completion</u>	<u>Remarks</u>
Kiyang	66/33 100x3	Removal	July	1948 Utilizing Kiyang Chemical Substation
Hasöng2	66/23 100x4	"	October	1946 Abandon of Hasöng Iron Mine
Ünbong	66/33 1500x4	"	March	1947 To Samgang Sub-Station (from Chin)
Chilpyöng	66/33 50x4	"	September 1946	Supply from Tong-Chëm Substation (Chilpyöng Mine)
Sinpyöng	22/33 200x3	"	December	1946 Abundan of Sinpyöng Mine
Changnim	22/33 200x4	"	March	1950 Supply Changnim Subst tion (66 KV)
Cgangsan	66/22 250x4	"	April	1947 Abundon of Changsan Mine
Kangsö Coal Mine	66/33 250x4	"	May	1950 Abundon of Kangsö Coal Mine
Taetaeryöng	22/33 300x3	"	December	1948 Construction of New Substation (66 KV)
Söngyori	66/11 440x7 66/33 750x7	"	January	1949 Con. of New. at Tong-Pyöngyang
Majang	66/33 510x2	"	September 1948	Abandon of Yongtu Mine
Munpyöng Steel Pipe	22/33 500x1	"	June	1950 Abandon of Steel Pipe Factory
Söngjin (No.1)	66/22 1000x5	"	November	1949 Supply from Sub- station at Chöngji Steel Mill
Anbyön	22/33 200x3	"	October	1947 Addition at Paehwa Sqbstation
Yangyang	66/22 1500x4	"	April	1949 Interruption of Power Reception in South of 38th Parallel
Pukchin	66/33 750x4	Addition	October	1949 Restoration of Unsan Mine
Inhëngni	66/33 1,000x1	"	October	1948 Increase of Gen. Demand.
Tongdaewön	66/33 700x2	"	November	1947 Increase of Gen."
Nampo (No.1)	66/33 500x3	"	June	"
Mach'anmni	22/33 150x3	"	August	1948 Expansion of Reservoir (Nampo)
Wönümni	22/33 200x3	"	October	1949 Expansion of Salt Mill
Chaeryöng	66/22 5,000x2	"	September 1950	Increase of Pump- ing and Mining
Sariwön	66/33 1500x2	"	June	1948 Increase of Gen. Demand
Sinchön	22/33 2000x2	"	December	1949 Increase of Pumpin
Kanggye	66/33 1500x4	"	March	1947 Increase of Gen. Demand.
aptong	66/22 1500x1	"	April	1950 Increase of Chönmä Mine
Söncöhön	66/22 1000x2	"	April	1950 " Chölsan Mine
Ungok	22/33 200x3	"	June	1949 Expansion of Mines
Chöngju	22/33 2000x3	"	December	1949 Increased of Gen. Demand
Sunchön	66/33 500x2	"	June	1948 Increase of Pumpin
Myohyangsan	22/33 100x3	"	October	1947 Exploitation of Myohyangsan Mine

<u>Name of Substations</u>	<u>Voltage &amp; Capacity</u>	<u>Kind</u>	<u>Date of Work Completion</u>	<u>Remarks</u>
Parwén	66/33 750x3	Addition	September 1948	Increase of Gen. Demand
Chöngjin (No.2)	66/22 4000x2	"	November 1947	Increase of Power at Factories
Chöngjin (NO.1)	220/66 100,000x1	"	November 1948	To supply power to Hamgyöngbukto
Paehwa	22/33 200x3	"	October 1947	Increase of Power at Factories
Iryöng	66/22 22/33 500x3	"	October 1948	Increase of Mines
Hoeryöng	66/33 750x3 1000x4	"		Increase of Gen. Demand for Power.
Yongdanpo	66/33 1000x3	"	September 1948	Expansion of Haeju Refinery

Survey of Transmission Lines (After 15 August 1950)

<u>Name of Line</u>	<u>Voltage</u>	<u>Kind</u>	<u>Section</u>	<u>Date of Work Completion</u>	<u>Re-Mark</u>
Taet'aeryöng Connecting Line	66KV	New	Choch'on-Inhüngni	7 Km December 1948	
Samchön	"	"	Chaeryöng-Samchön	18 " September 1950	
Anju Coal Mine	"	"	Maengchungni (No.1)		
Kwanpyöng Connecting Line	"	"	Anju Coal Mine	10 Km December 1954	
Sambang-wiik connecting Line	"	"	Kwanpyöng		
Nanam	"	"	Sökt'ang Spa	27 Km October 1949	
Saengchang	"	"	Sambang-wiik	32"	November 1948
Changjön	"	"	Chuü'l-Nanam	3 "	October 1948
Hamhüng (No.2)	"	"	Hyesan-Saengchang	4 "	December 1949
			Sinillipal-Changjön	35	June 1949
			Changjin-Hamhüng	4	November 1947
			(No.4)		
Kyesaeng	22 KV	"	Unsang-Kyesaeng	65	June 1950
Paengnyang	"	"	Pusö-Paengnyang	7	July 1949
Chölsan	"	"	Pusö-Chölsan	2	December 1949
Pungchöng	"	"	Taepyöng-Pungchöng	28	May 1947
Tongchangpo	"	"	Chaeryöng-Tongchangpo	6	May 1946
Söchön	"	"	Hanpö-Söchön	30	May 1947
Pungnyul	"	"	Anak-Pungnyul	12	August 1948
Yönhö	"	"	Sinanju-Yönhö	6	October 1948
Taet'aeryöng connecting Line	66KV	"	Choch'on-Inhüngni	7	December 1948
Samchön	"	"	Chaeryöng-Samchön	18	September 1950
Anju Coal Mine	"	"	Maengchungni (No.1)		
-Anju Coal Mine				10	December 1949
Kwangpyöng connecting Line	"	"	Kwanpyöng-Sökt'ang	27	October 1949
Sambang-Wiik	"	"	Spa		
Nanam	"	"	Sambang-Wiik	32	November 1948
Saengjang	"	"	Chuü'l-Nanam	3	October 1948
Changjön	"	"	Hyesan-Saengchang	4	December 1949
Hamhüng (No.2)	"	"	Sinillipal-Changjön	35	June 1949
			Changjin-Hamhüng	4	November 1947
			(No.4)		
Kyesaeng	22KV	"	Unsong-Kyesaeng	65	June 1950
Paengnyang	"	"	Pusö-Paengnyang	7	July 1949
Chölsan	"	"	Pus.o-Chölsan	2	December 1949
Pungchöng	"	"	Taepyöng-Pungchöng	28	May 1947
Tongchangpo	"	"	Chaeryöng-Tongchangpo	6	May 1946
Söchön	"	"	Hanpö-Söchön	30	May 1947
Pungnyul	"	"	Anak-Pungnyul	12	August 1948
Yönhö	"	"	Sinanju-Yönhö	6	October 1948
Chöngsan	"	"	Yöngyu-Chöngsan	12	October 1949
Tanchön	"	"	Ibwön-Tanchön	24	September 1948
Chökchi	"	"	Aoji-Chökchi	20	April 1947
Sögwangsa	"	"	Paehwa-Sögwangsa	12	October 1949
Köjin	"	"	Söju-Köjin	32	July 1948
Sokchö	"	"	Koju-Sokchö	12	July 1949
Yongan	"	"	Hoeryöng-Yongan	18	November 1949
Chungdo	"	"	Hoeryöng-Chungdo	43	November 1949
Yongsöng	110	"	Pongung-Yongsöng	4	November 1946
			(No. 46)		
Majang	66	Removal	Unsan-Majang	29.5	October 1948
Wanpung	"	"	Taeyutong-Wanpung	19	October 1948
Naksan	"	"	Kwanhae-Naksan	15	April 1950
Pokkye	"	"	Kümhwä-Pokkye	275	October 1949 one circuit line re remove

<u>Name of Line</u>	<u>Voltage</u>	<u>Kind</u>	<u>Section</u>	<u>Length</u> 4 Km	<u>Date of Work</u>	<u>Re-completion</u>	<u>marks</u>
Maengchungni (one part)	66KV	Removal	Sinanju-Maengchungni		March	1950	
Ungdong	22	"	Kaego-Ungdong	22	June	1948	
Undong	"	"	Unsong-Üidong	45	May	1947	
Songpyöng	"		Taepyöndong-Songpyöng	24	December	1946	
Changpödong	"	"	Ch'angpödong-Yudong	12	August	1949	
Paengnyang	"	"	Pusö-Paengnyang	8	March	1949	
Oaegwa Branch	"	"	Paehwa-Anbyön	5.6	October	1947	
Pangyo	"	"	Sakchu-Pangyo	12	December	1946	

Transmission Line as of June 1949

<u>Section/kind</u>	<u>22</u>	<u>66</u>	<u>110</u>	<u>154</u>	<u>220</u>	<u>Total</u>
Höchön-gang						
length	24,274	49,916	415,760		365,503	855,453
Extension	72,822	49,738	2,466,810		1,096,509	2,785,879
Supports	469	374	1,490		1,004	3,337
Changjin-gang						
	90,537	106,987	122,357		7,966	327,847
	271,700	611,000	499,400		24,000	1,406,100
	831	385	358		26	1,100
Puchön-gang						
	146.3	299.5			445.8	
	362	673			1,035	
West Trans-mission						
	17.3		477.7	293.6		758.6
	103.8		2,505.3	580.8		3,189.9
	64		1,306	765		2,135
Pyöngyang						
	16,900	17,420			34,320	
	50,700	75,200			125,700	
	255	125			380	
Pyöngnam						
	314,359	668,147			982,506	
	443,087	2,912,416			3,355,493	
	5,442	5,336			10,778	
Haeju						
	310,120	346,300			656,420	
	938,250	141,510			1,079,760	
	4,750	2,005			6,755	
Sinüiju						
	342,268	190,454			592,722	
	1,024,675	560,167			1,554,842	
	4,719	1,712			6,431	
Hamhung						
	75,107	122,506			197,613	
	225,321	641,084			866,405	
	1,193	680			1,873	
Wönsan						
	109,963	434,455			544,418	
	329,589	1,303,365			1,632,954	
	1,661	4,846			6,507	

<u>Section/kind</u>	<u>22</u>	<u>66</u>	<u>110</u>	<u>154</u>	<u>220</u>	<u>Total</u>
Ch'ongjin	113,400	74,200				187,600
	340,200	248,000				588,200
	1,679	619				2,298
Namp'o	148,490	531,904				680,394
	490,664	1,967,835				2,445,439
	2,328	3,736				6,054
Tanch'on	367,648	54,210				878,858
	1,161,404	2,551,764				3,353,548
	6,165	3,402				9,567
Hwach'on			14,800			
			74,800			
			35			
Kanggye	278,186	231,642				509,801
	282,367	235,096				517,453
	4,486	2,147				6,527
Total	2,100,715	3,432,371	822,647	581,857	661,069	7,598,459
	5,799,379	10,351,415	3,077,810	3,075,500	1,701,309	24,005,413
	33,187	26,133	2,548	1,699	1,795	65,362

**Transformer Facilities**

**November 1950**

Statistics of Transformer Substations in North Korea

<u>Item/Substation</u>	<u>220 KV No. Capacity</u>	<u>154 KV No. Capacity</u>	<u>110 KV No. Capacity</u>	<u>66 KV No. Capacity</u>	<u>44 KV No. Capacity</u>	<u>22 KV No. Capacity</u>	<u>11 KV No. Capacity</u>	<u>Total No. Capacity</u>
North West Bureau	3 500,000	2 120,000		56 205,831		89 88,601	1 9,000	151 923,432
" (Home uses)				30 331,606	2 5,250	26 20,018	2 16,350	60 373,224
Total	3 500,000	2 120,000		86 537,437	2 5,250	115 108,619	3 25,350	211 1,296,656
North-East Bureau	1 100,000	1 15,000	3 139,500	55 164,108		62 81,826		142 500,434
" Home use	1 160,000		2 427,000			8 7,950		11 594,950
Total	2 260,000	1 16,000	5 566,500	55 164,108		90 89,776		153 1,095,384
Bureau Total	4 600,000	3 135,000	3 139,500	111 369,919		171 170,427	1 9,000	293 1,423,866
Home use Total	1 160,000		2 427,000	30 331,616	2 5,250	34 27,968	2 16,350	71 968,174
Grand Total	5 760,000	3 135,000	5 566,500	141 701,545	2 5,250	205 198,395	3 25,350	364 2,392,040

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## Transformer Substations (Before 25 June 1950)

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor Indoor	Cooling Method	Phase	Frequency	Common use	Number	Spare	Maker	Remarks
Inhungni	1,000	2,000	66	3.3		△ - △	Outdoor	Self Cooling	1	60	"	3	1	Mitsubishi	
"	10,000	10,000	66	3.3		"	"	"	3	"	"	1		Hiden	
Nangnang	75,00	2500	66	22		"	"	"	1	"	"	3	1	Hidachi	
"	900	200	22	3.3		"	"	"	1	"	"	3	1	Hidachi	
East-Pyongyang	12500	12500	66	11		"	"	"	3	"	"	1			
"	1500	600	66	"		"	"	"	1	"	"	3	1	Hidachi	
Imwön	1800	600	66	11	3.3	△ - △	"	"	1	"	"	3	1	"	
Changchilli	1200	400	22	"		"	"	"	1	"	"	3		"	
Pyöngchölli	6000	2000	22	"		"	Indoor	"	1	"	"	3	1	"	
Taetaeryöng	1500	600	66	3.3		△ - △	Outdoor	"	1	"	"	3			
Yusöggni	4500	1500	11	"		"	Indoor	"	1	"	"	3	1	Shibaura	
Kosan	450	150	22	3.3		"	Outdoor	"	1	60	"	3	Shibaura	Shibaura	
Chosön	1500	500	"	"		"	"	"	1	"	"	3	1	Mitsubishi	Chemistry
Samsin	600	100	11	3.3		"	"	"	1	"	"	6	1	Fiji	Coal Mine
Kobangsan	1050	350	66	"		"	"	"	1	"	"	3	1	Osaka	"
"	600	200	11	"		"	"	"	1	"	"	3	3	U/S/A	"
Sadong	2100	700	66	"		"	"	"	1	"	"	3	1	Shibaura	
Sinüiju (No.1)	6000	2000	22	"		"	"	"	1	50	"	3	1	Hidachi	
Sinüiju (No.2)	4500	1500	"	"		"	"	"	1	50	"	3		"	
Sout Sinüiju	4500	1500	66	22		"	"	"	1	50	"	3		"	
"	1350	450	"	3.3		"	"	"	1	50	"	3	Fuji		
Sinüiju Central	1500	5000	"	"	.	"	"	"	1	"	"	3	Shibaura		
Uiju	2700	900	"	"		"	"	"	1	"	"	3		"	
Changpödong	696	400	22	3.3		V-V	Outdoor	"	1	50	"	2	Kitagawa	Use 60-	
Yongampö	3000	1000	66	22		△ - △	"	"	1	60	"	3	1	Shibaura	
"	900	300	22	3.3		"	"	"	1	"	"	3	1	"	
Yangsi	1500	500	22	3.3		"	"	"	1	60	"	3	Fuji		
Namsi	450	150	"	"		"	"	"	1	"	"	3	Nishijima		
Kangbyölli	3000	3000	"	"		"	"	"	3	"	"		Mitsubishi	Electric R/R	

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor Indoor or	Cooling Method	Phase	Frequency	Common use	Number Spare	Maker	Remarks
Wonsong	1050	350	22	3	3	△-△	Outdoor	Self cooling	1	50-	3		Kitagawa	
Sunchon	2000	1000	66	22	"	"	"	"	3	60	1	1	Shibaura	
"	1500	500	"	"	"	"	"	"	1	"	3	1	"	
"	1020	340	22	3	3	"	"	"	1	50-	3		Fuji	
"	"	"	"	"	"	"	"	"	"	60				
Charyagwan	900	300	66	3	3	"	"	"	1	60	3		Shibaura	
Haptong	7100	1500	"	22	"	"	"	"	1	"	5		"	
"	150	50	22	3	3	"	"	"	1	"	3		"	
Sokchu	2250	750	66	22	"	"	"	"	1	"	3	1	"	
"	1200	200	22	3	3	"	"	"	1	"	6	1	"	
"	300	100	"	"	"	"	"	"	1	"	3		"	
Chongsongjin	300	100	22	3	3	"	"	"	1	"	3		Osaka	
Sinsang	300	100	"	"	"	"	"	"	1	"	3		Shibaura	
Chongju	3460	2000	"	"	"	V-4	"	"	1	"	2		Mitsubishi	
Kilssang	300	100	"	"	"	△-△	"	"	1	10	3	1	Hidachi	
Koan	150	50	"	"	"	V-V	"	"	1	"	2		Osaka	
Yonghyon	300	100	"	"	"	"	"	"	1	"	3		Shibaura	
Kusong	300	100	"	"	"	"	"	"	1	"	3		Hidachi	
Unjon	600	200	"	"	"	"	"	"	1	"	3		Shibaura	
"	300	100	"	"	"	"	"	"	1	"	3		Hidachi	
Chongjung	150	50	"	"	"	"	"	"	1	"	3		Fuji	
Mulleye	381	220	"	"	"	V-V	"	"	1	"	2	1	Nagoya	Mining
Ungok	600	200	"	"	"	△-△	"	"	1	"	3		Nishijima	"
"	174	100	"	"	"	"	"	"	1	"	3		Hidachi	"
Ogung	750	250	"	"	"	"	"	"	1	"	3		Hidachi	"
Noyuri	1500	50	2	"	"	"	"	"	1	60	3		Shibaura	"
Chungdaeri	870	500	"	"	"	V-V	"	"	1	60	2		"	"
"	"	"	"	"	"	"	"	"	"	50				
Kuan	435	250	"	"	"	"	"	"	1	60	2	1	Hidachi	"
Samsong	900	300	"	"	"	△-△	"	"	1	"	3	1	"	"
Sangdandong	693	200	"	"	"	V-Z-V	"	"	1	50	4		Hidachi	"
Puss	150	50	"	"	"	△-△	"	"	1	60	3		Shibaura	
Puss	432	250	"	"	"	V-V	"	"	1	"	2			
Sanchon	300	100	"	"	"	△-△	"	"	1	"	3		"	"

**Power Plant Facilities**

**November 1950**

POWER PLANT FACILITIES

Name of Power Plant	Output	Motor Kind	(KW)	No.	Maker	Generator Capacity	Voltage	Rotation No.	Maker	Capacity	1st (V)	Transformer	2nd (V)	No.	Maker
Changjin-gang Power Plant (No. 1)	144,000	Pelton	38,500	4	Chōnöpsa	40,000	10,000	160	4	Shibaura	40,000	10,500	110,000	5	Shibaura
						7,500				7,500	10,500	11,000	1	"	
						5,000				5,000	10,500	11,000	1	Hidachi	
						300				300	11,000	3,450	3	Shibaura	
						150				150	11,000	210	4	"	
Changjin-gang (Length) (No. 2)	106,300	Francis	(33,600)	4	"	31,100	11,000	600	4	"	45,000	10,500	110,000	3	"
						60,000				60,000	10,500	154,000	4	"	
						5,000				5,000	10,500	3,450	1	Hidachi	
						300				300	10,500	3,450	3	Shibaura	
						150				150	10,500	210	4	"	
Changjin-gang (Length) (No. 3)	42,000	Francis	(14,500)	3	"	15,500	11,000	300	3	"	15,500	10,500	110,000	3	"
						300				300	11,000	3,450	1	"	
						150				150	11,000	210	2	"	
Changjin-gang (Length) (No. 4)	34,200	Francis	(15,000)	3	"	13,500	11,000	360	3	"	18,000	10,500	110,000	4	"
						300				300	22,000	3,450	2	"	
						150				150	11,000	210	2	"	
Höchön-gang Power Plant (No. 1)	145,000	Pelton	(breadth) 42,000	4	"	40,000	11,000	400	4	"	80,000	10,500	220,000	2	"
						4,000				4,000	11,000	66,000	4	Fuji	
						300				300	2,000	3,450	3	Osaka	
						150				150	11,000	310	4	Shibaura	
Höchön-gang (No. 2)	69,800	Francis	(Length) 22,000	4	"	20,000	11,000	514	4	"	40,000	10,500	220,000	2	"
						200				200	22,000	3,450	3	"	
						150				150	11,000	210	4	"	
Höchön-gang (No. 3)	58,000	Francis	(Length) 14,500	4	"	18,500	11,000	400	4	"	40,000	10,500	220,000	1	"
						37,000				37,000	110,500	114,000	2	"	
						300				300	22,000	3,450	3	"	
						150				150	11,000	210	2	"	
Höchön-gang (No. 4)	66,000	Francis	(Length) 21,000	4	"	20,000	11,000	400	4	"	40,000	10,500	110,000	2	"
						3,000				3,000	11,000	66,000	4	"	
						300				300	22,000	3,450	1	"	
						150				150	11,000	210	3	"	
Supung Power Plant	400,000	Francis	(Length) 105,000	2	Chōnöpsa	100,000	50/60	16,500	2	Shibaura	100,000	16,500	230,000	2	Shibaura
						6,000				6,000	16,500	230,000	2	"	
						105,000	2			105,000	16,500	69,000	1	"	
						100,000				100,000	16,500	3,450	3	"	
						150				150	16,500	3,450	4	"	
						700				700	16,500	3,450	4	"	
						600				600	16,500	210	5	"	
Puchön-gang Power Plant (No. 1)	129,600	Pelton	(breadth) 45,000	4	Hoit	36,000	11,000	360	v4	Seameans	36,000	11,000	110,000	5	"
						4,000				4,000	11,000	66,000	3	"	
						350				350	11,000	3,300	3	Mitsubishi	
						150				150	11,000	210	4	"	
Puchön-gang Power Plant (No. 2)	41,900	Pelton	(Breadth) 31,000	2	Chōnöpsa	23,000	11,000	450	2	Shibaura	23,000	11,000	110,000	3	Shibaura
						100				100	11,000	3,300	3	Mitsubishi	
						150				150	11,000	210	3	Shibaura	
Puchön-gang Power Plant (No. 3)	18,000	Pelton	(breadth) 27,000	1	"	23,000	11,000	279	1	"	6,666	11,000	110,000	4	"
						110				110	11,000	3,300	3	Mitsubishi	
						150				150	11,000	210	1	Shibaura	
Puchön-gang Power Plant (No. 4)	11,700	Pelton	(breadth) 9,000	2	"	6,500	11,000	257	2	"	4,333	11,000	67,500	4	"
						500				500	11,000	22,000	4	Osaka	
						50				50	11,000	33,000	3	"	
						50				50	11,000	210	3	Shibaura	
Puryöng Power Plant (No. 1)	13,400	Pelton	(breadth) 2,609	2	Hidachi	8,600	6,600	400	2	Hitachi	5,733	6,300	66,000	3	Hidachi
" (No. 2)	9,400	Francis	(Length) 5,334	2	"	6,000	6,600	720	2	"					
" (No. 3)	5,200	"	2,939	2	"	3,300	6,600	720	2	"	2,200	6,300	66,000	3	Hidachi
Hwachön Power Plant	81,000	"	30,000	3	"	30,000	11,000	200	3	"	30,000	10,500	3,450	1	"
											30,000	10,500	154,000		
											30,000	10,500	66,000	1	"

(6)

Curvelines

of

Water Capacity

at

Each Reservoir

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Bachan Lake Plant

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262  
200 188 186 184 full water levelEffective Pondage  $5.48 \times 10^8 \text{ m}^3$ 

182 180 178 176 174 172 170 168 166 164 162 160 158 156 154 152 150 148 146 144 142 140 138 136 134 132 130 128 126 124 122 120 118 116 114 112 110 108 106 104 102 100 98 96 94 92 90 88 86 84 82 80 78 76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46 44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0

Effective water level (21M 20D)

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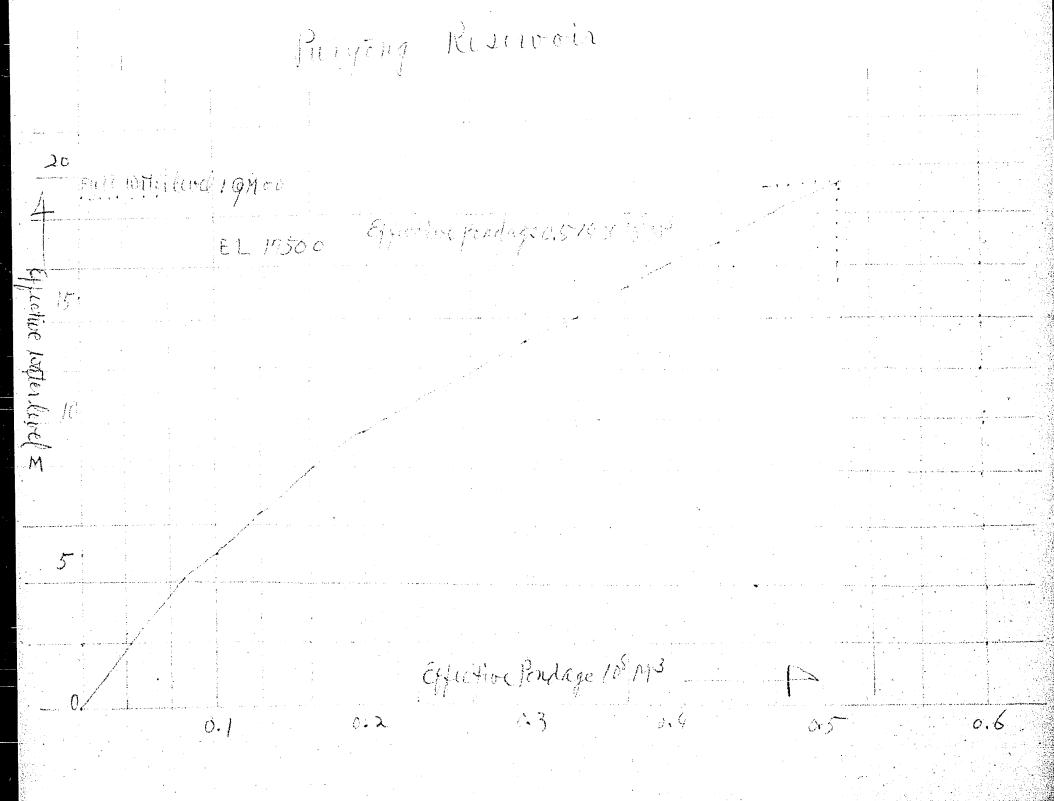
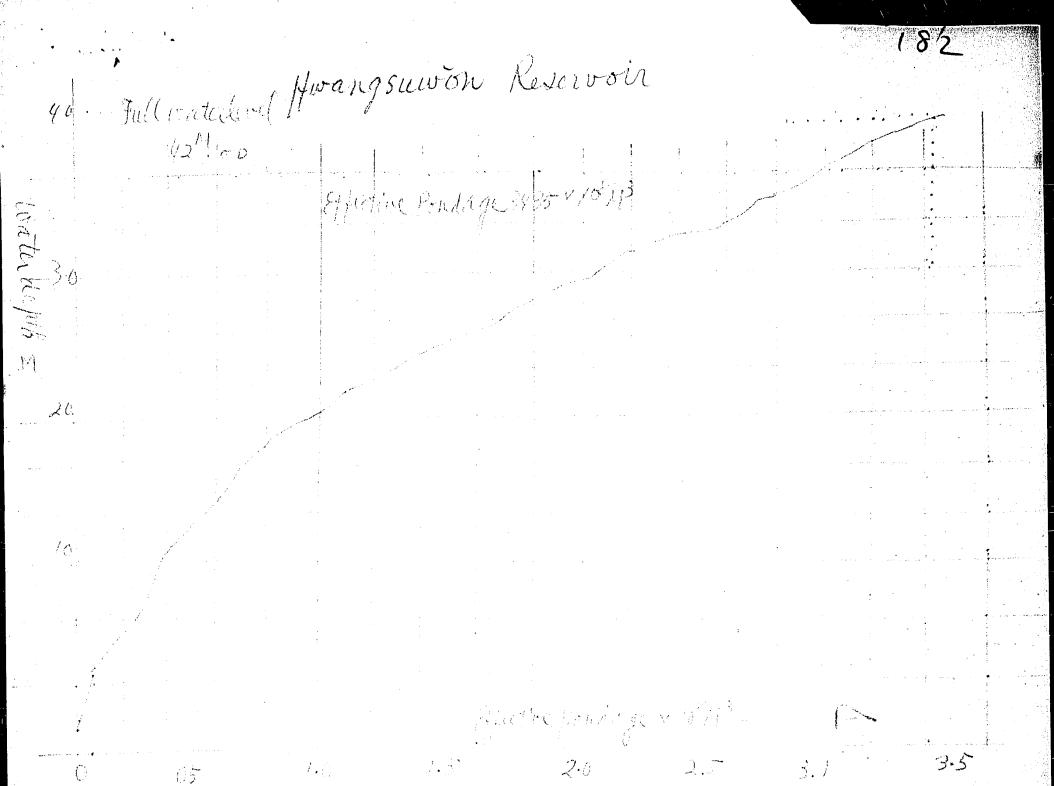
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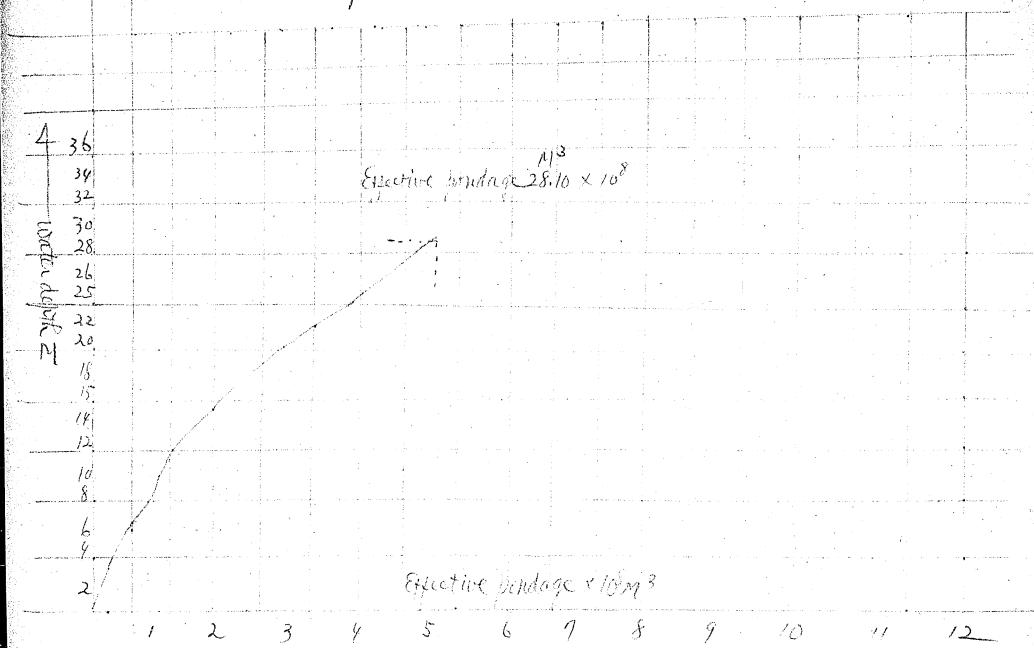
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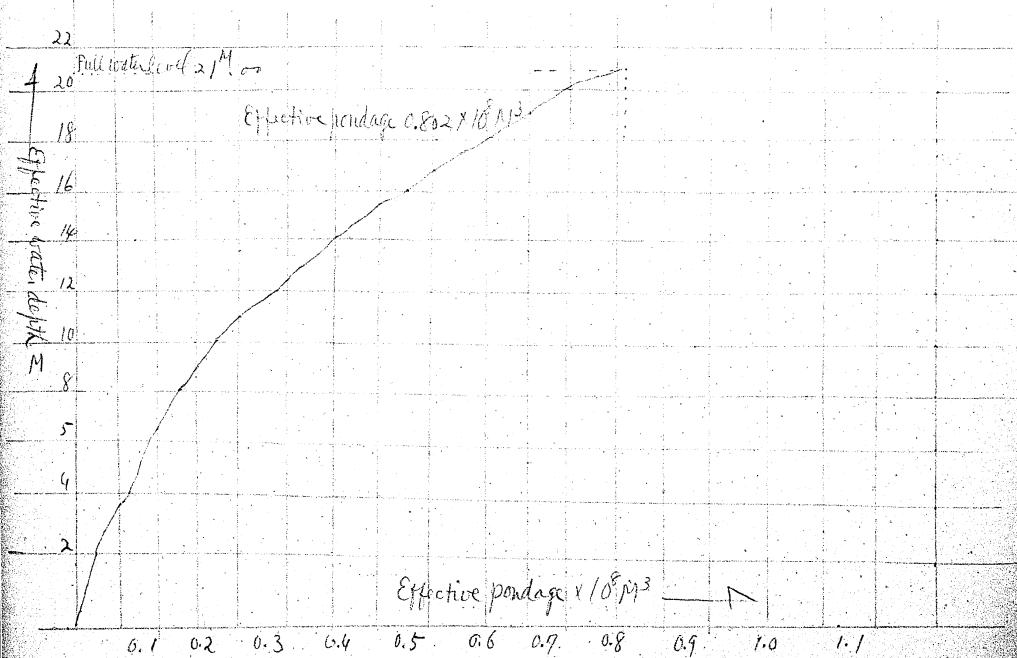


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## Tonglogang Reservoir

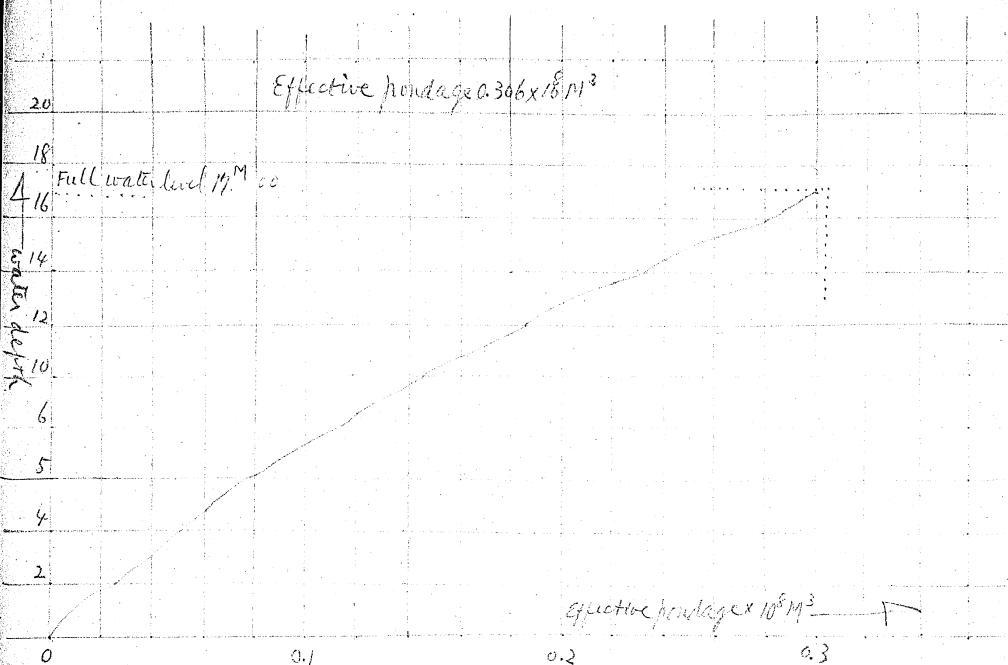


## Naejungui Reservoir

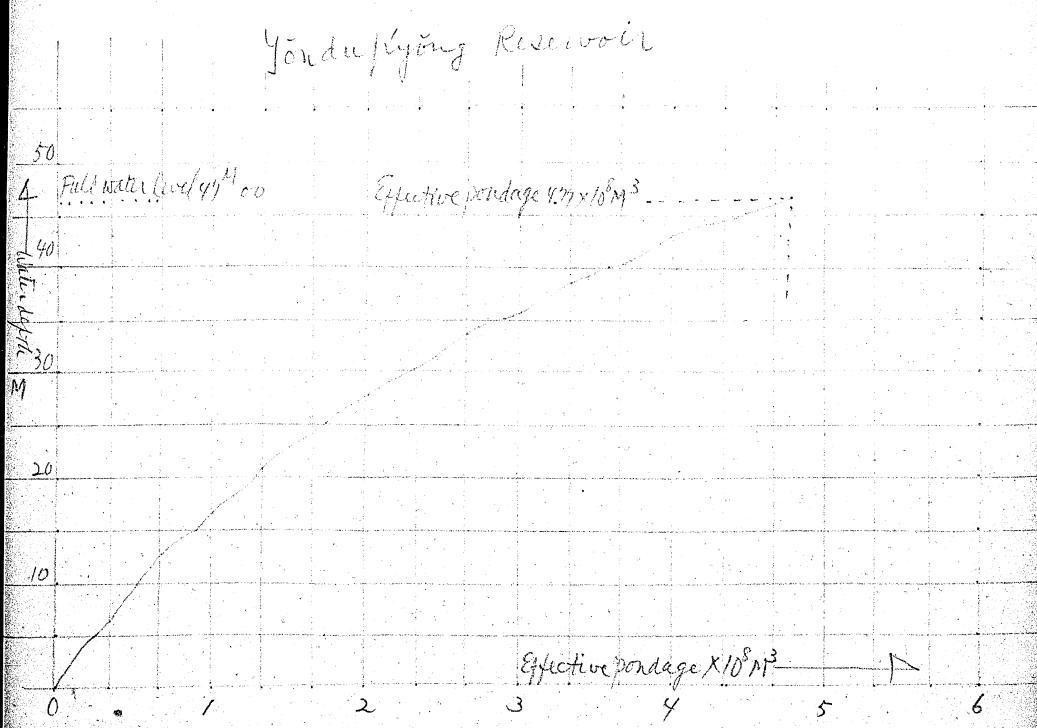


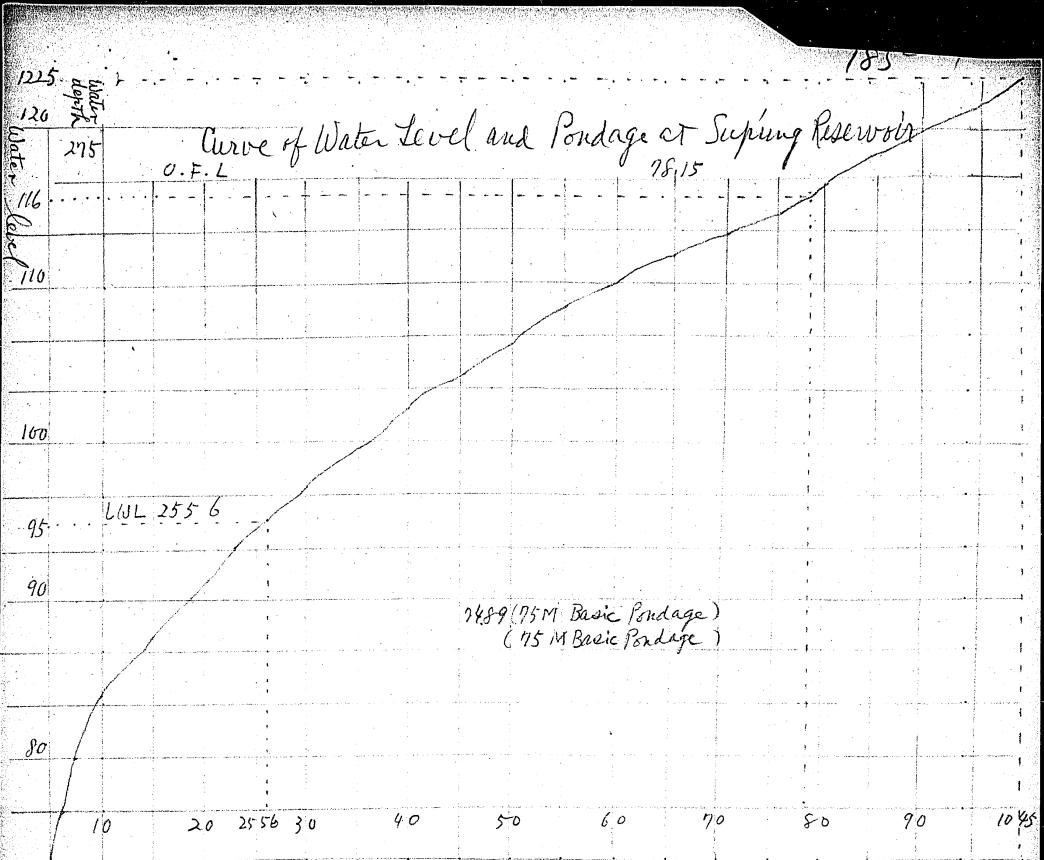
## Sach'opyeong Reservoir

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Effective porridge  $0.366 \times 10^8 M^3$ 

## Yonduflyeong Reservoir

Effective porridge  $8.77 \times 10^8 M^3$ 



Items for Reference

Actual Results of Production  
in North Korea (16 November 1950) 186

## (1) Electricity

Name of Factories	Name of Articles	Unit	Plan for February	Production in February	Plan for March	Production in March	Remarks
Kangso Electric machine Works	2nd Class Wire	+	38	36,510	38,000	33,250	
"	4th Class Wire	"	4	0	6,000	0	
"	uncoated electric wire	+	150,200	59,600	106,100	63,695	

## (2) Coal

Doji Coal Mine	Bituminous Coal	\$	39,000,000	31,613	42,000	23,384	
Kogonwon "	"	"	9,500	9,787	12,500	12,685	
Anju "	"	"	21,000	21,308	23,200	24,230	
Sinchung "	Anthracite Coal	\$	37,000	37,624	41,000	46,340	
Kaechon "	"	"	30,500	20,329	34,000	19,063	
Sinyusan "	Bituminous Coal	"	7,000	6,000	8,500	8,656	
Kungsim "	"	"	19,000	13,605	22,000	15,234	
Yongmun "	Anthracite Coal	"	18,000	12,952	19,600	15,419	
" "	Lump Coal	"	1,600	870	1,800	1,545	
Yongdung "	"	"	3,000	2,163	4,000	4,041	
" "	Anthracite Coal	"	16,500	12,995	10,000	13,371	
Tokchon "	"	"	19,500	19,535	21,500	21,580	
Hungnyoung "	"	"	21,000	21,462	24,000	25,125	
Kangdong "	"	"	11,100	8,077	11,800	8,000	
Samsin "	"	"	10,700	15,672	16,000	18,484	
Sedong Factory "	"	"	5,300	18,807	17,200	19,715	
" Briquettes	"	"	11,400	6,248	5,900	6,093	

## (3) Colored Metal Ores

187

Hankung Mine	Crude ore	\$	21,710	21,186	21,710	30,104	incl
"	Concentrate	"	2,550	2,588	2,560	3,564	CuAuPzn
Holtong "	Crude ore	"	20,040	6,876	20,040	12,724	
"	Concentrate	"	1,160	1,445	1,170	3,991.8	
"	High-grade ore	"	2,600	9,152	2,700	992	
Suan "	Crude copper	"	18,937.8	10,527.3	18,978	17,605.2	
"	Copper carbonate	"	990	653.9	990	1,124.067	
"	Crude molybdenum	"	4,590	2,272	4,590	3,286	
"	Molybdenum Concentrate	"	190	0	17	92	
"	High-grade ore	"	190	0	190	0	
Kondok "	Crude lead	"	11,086	10,615	11,469	13,470	
"	Lead concentrate	"	570	459	570	629	
"	Zinc concentrate	"	2,980	2,642	3,000	3,516	
Taeyudong "	Crude ore	"	12,087	5,604	16,117	7,145	
"	Concentrate	"	1,000	573	2,000	857 <sup>72</sup>	
Koksan "	Tungsten	"	200	160	300	187 <sup>56</sup>	
Hwangnung "	Crude ore	"	1,166	669	1,069	1,102 <sup>42</sup>	
"	Concentrate	"	170	171	170	315 <sup>07</sup>	
Hukhang "	Crude ore	"	-	-	5,643	79 <sup>35</sup>	
"	"	"	280	253 <sup>3</sup>	290	381 <sup>5</sup>	

## (4) Black metal ores

188

Tanch'On Mine	Iron sulphide	\$	19,100	19,495	19,200	29,166
"	Ore dust	"	-	-	-	22,363
Hasöng "	Brown iron lump ore	"	13,000	12,692	14,000	16,452
"	Brown iron Ore dust	"	9,000	22,275	9,000	11,965
Charyong "	Brown iron ore	"	6,000	6,544	6,400	10,620
Ch'ondong "	Iron ore	"	15,000	15,491 <sup>4</sup>	16,000	19,356 <sup>9</sup>
Ch'angdo "	Iron sulphide	"	15,491 <sup>4</sup>	16,000	6,000	
Kaech'on "	Earth graphite	"	3,680	3,742	3,794	3,842

## (5) Metal

Hwanghae Iron Hill	Pig iron	\$	20,200	17,205	22,400	19,165
"	Cokes	"	19,400	16,419	20,600	26,862
"	Steel ingot	"	16,200	9,512	12,400	11,092
"	Rails	"	-	-	-	-
"	Square steel	"	0	833	0	293
"	Special square steel	"	500	238	0	399
"	Wing steel	"	2500	904	500	3292
"	Thick plate	"	5950	5432	6,000	5445
"	Thin plate	"	580	102	480	1208 <sup>62</sup>
"	Tin	"	740	850	816	1021
"	Pitch	"	360	423	385	493
"	Galvanized sheet iron	"	145	64	225	150
"	Sodium Sulphate	"	200	387	225	248
"	Round saw	"	310	372	540	332

Songjin

					(8)
Iron Mill	Steel ingot	\$	4660	3455	5170
	Fe - Cr		150	54	165
	Fe - Mn		6	13	7
	Steel rod		670	218	690
	Hollow steel tube		65	44	60
	Medium-size steel plate		600	405	605
	Thin plate		335	251	390
	Silicon steel plate		68	29	117
	High speed steel		60	260	190
	Coal dust steel		750	464	600
	Iron wire		10	38	22
	Electrode		365	187	405

Kangson

Steel Mill	Steel ingot	"	2200	1215	2400	1873 <sup>***</sup>
	Blooming	"	2480	1263	2960	2160 <sup>278</sup>
	Steel ingot	"	2200	1215	2400	1873 <sup>***</sup>
	Roller	"	50	90	50	22 <sup>2</sup>
	Medium-size steel plate	"	6100	797	1200	1470 <sup>255</sup>
	Miniature steel plate	"	1100	418	1125	296 <sup>547</sup>
	Silicon iron	"	39	84	43	76 <sup>446</sup>
	Fe-Mn	"	85	113	45	106 <sup>836</sup>

Chongjin

Steel mill Granulated iron

\$ 2,640 2,110<sup>5</sup> 2,930 3,241

170

Steel ingot

\$ - 389 - 445<sup>2</sup>

Cokes

17,670 10,489 19,540 13,599<sup>2</sup>

Pitch

\$ 394 284 415 222

Coal

450 349 835 434<sup>2</sup>

Sodium sulphate

\$ 308 0 263 242<sup>2</sup>

Metals

Copper, Steel

350 238 399 226<sup>2</sup>

Refining

Electrolytic zinc

750 428 350 325<sup>2</sup>

Zinc oxide paint

60 368 60 382<sup>2</sup>

Sodium arsenite

50 55 50 70<sup>3</sup>

Cadmium

38 22 22 22<sup>3</sup>

Hwangnam

Electrolytic copper

300 214 300 295<sup>2</sup>

Refinery

Electrolytic lead

300 327 300 220<sup>2</sup>

Sodium sulphate

30 38<sup>67</sup> 46 51<sup>2</sup>

Electrolytic silver

1,098 1,432<sup>48</sup> 1,123 1,663<sup>25</sup>

Copper gold

497 256<sup>35</sup> 527 387<sup>453</sup>

Munipeng	Refinery	Canned lead	#	915	434	1,194	793	191
		Photographic film	#	640	200	318	632	228
		Plastic film	#	35	51	45	46	3
		Photolytic filter	#	18.67	112.0	1,934	1,204	166
		Silver oxide	#	58	40	61	37	58
		Electrolytic filter	#	34.2	40	42	34	19

Wujiab

Electric factory	Electrode	#	2,00	200	300	200	100
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### Machine Shop

Wenzong	Electro-plate	#	3	326.0	4	333.0	
Machine Factory	pinch	#	2	66.0	4	56.0	

Bolt

Datafill

Bucket

Hydraulic pump

Centrif

Machine Factory	Fatle	#	1.7	29,60.0	4	62,05.0	
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Plane

Pinion

Haeju	Decelerating	#	0.5	0.6	0	0.79	500.0
Machine Factory	pinion	#	1	1	1	1	1

Draught car

for Forest R/R

Filter

Filter

192

Mukden	Hunting machine	1.2	-	1.2	25.20	100.42
		2.2	0	2.2	0	45.52
		1.1	0.3	0.9	0	50.12
	Small diamond saw	1.2	1.2	1.2	42.00	
Wu Hsien	Grain mill	4.2	0	3.0	0.17	50
	Chipping machine	1.2	0.6	0.9	0.24	50
Pukchow	Overhead	2	3	4	0.46	50
Mukden	Machine factory	2	3	4	0.46	50
	Electric cell	3	10.7	4	0.47	50
	Fan	3	3.2	4	0.42	50
Nanking	Steel jacket case	30.5	32.5	33.5	124.25	
Machine factory		35	60	25	138.25	
	Electric fan	1.50	1.32	1.50	18.50	
	Plough	11.20	10.12	22.00	88.20	
	Cattle power	1.20	0	2.00	28.20	
	Hammer machine	1.20	0	2.00	28.20	
Peng Yung	Straw rope	4.0	16.0	4	4	50
Farm Implements making	Factory machine	4.0	16.0	4	4	50
	Mower	6.00	2.81	3.00	72.28	
	Electric fan	2.00	-	3.00	60.69	
	Plough	5.00	10.89	5.60	100	

Wenzan

Shipyard	Steam engine	6.3	0.13	6.5	0.52	193
	Rubber boat	10	5.42	16	0.43	
	File deliver	0.6	-	2.9	0.6	

Naguan

Machinist	Rubber st. roller	0	3	0.50
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1	First furnace	-	-	-	-	
2	Jacket	-	-	-	0.34	0.23
3	Boiler	-	-	-	-	0.03
4	Boiler	-	-	-	-	0.10
5	Boiler	-	-	-	-	0.04

## (7) Chemicals

Hungnam Chemical  
Fertilizer sulphate F 24,810 28,627 25,500 32,097

Ammonium phosphate	1,203	1,922	1,550	1,476
Ammonia	6,536	8,036	7,512	8,050
Glycerine	53	45	58	65
Laundry soap	990	672	1,050	1,350
Toilet Soap	79	88	88	103
Concentrated sulphuric acid	988	610	826	991
Lilite sulphuric acid	24,158	23,863	22,820	28,153
Spatzall electrode	98	161	98	137
Natural electrode	312	345	368	320

194

Penghuang Chemical Factory	Carbide	\$	4582	9226	2906	11,703
"	Coal nitrogen	"	1950	2296	2150	3,645
"	"	"	10	126	120	172
"	Lignite	"	696	786	547	819
"	Liquid chlorine	"	31	665	38	59
"	Sodium hydroxide	"	840	865	910	982
"	Sodium carbonate	"	500	587	592	775
"	Alcohol	kl	340	425	350	857
"	Acetic acid	"	25	37	30	37
"	Electron	"	23	372	26	45
"	Dium cans		39,650	31,840	32,000	35,872

## Hsing Hua

Gun powder factory	Nitramite	\$	827	0	1097	498.2
"	Fuse	Kw	2440	2103	2660	3610
"	Explosive compound	"	245	26 <sup>50</sup>	270	Publication stopped (Secret)
"	Ammonium nitrate	\$	289	1291 <sup>746</sup>	315	255
"	Ammonium nitrate	"	1726	3029	1249	1384 <sup>71</sup>

Sunchon Chemical factory	Carbide	\$	1550	17173	1900	1912
"	Calcium cyanamide	"	1070	1150	1050	1419



## (8) Building Materials

196

Sungori  
Cement Factory Cement \$ 16,000 14,484 20,102 13,117

Haeju  
Cement Factory " " 6,520 7,584 9,010 12,485

Madong  
Cement Factory " " 7,580 7,630 10,030 10,048

Changari  
Cement Factory " " 11,000 11,269 12,000 14,285

Kohank  
Cement Factory " " 5,570 5,755 6,70 7,282

Nampo Ind.  
Metal Factory Steel bars " 500 0 200 96

Sinuiju  
Textile Mill Cotton yarn kg 16,000 12,484 12,000 13,117

" " Linen wear 16,000 12,484 12,384 13,117

" " Cotton goods m 148,627 109,209 102,831 918,678 Shantung  
" " Twill " " 100,000 100,000 100,000 100,000 Twill

Sinuiju  
Paper Mill Foreign paper " 579 2472 281 313

" " Rice paper " 28 17 92 62

" " Tissue paper " 15 15.3 15 23

Sinuiju  
Pulp Mill Rock pulp " 272 352 296 444 319 B.O. class

" Craft paper " 40 52.5 43 57 16

" Drawing paper " 172 178.3 188 208 843

" Toilet paper " 110 248.2 125 258 26

797

Sariwon						
Textile Mill	Sheeting	m	324,083	131,889	324,084	212,9552
"	Twill	m	169,416	123,809	169,417	157,833
"	Overall suit	m	2,833	0,369	2,834	2,450
"	Cotton, long	m	3,100	7,933	5,900	9,532
"	Blanket	m	1,000	1,324	1,325	1,157
"	Cotton yarn Kg		33,000	89,102	84,080	72,887

Ch'engjin						
Textile mill	Rayon	t	125	125 <sup>2</sup>	125	110 <sup>25</sup>
"	Concentrated Sodium sulphite	t	333	181 <sup>650</sup>	339	604 <sup>153</sup>
Kilchu	Pulp mill	t	400	208	600	338 <sup>25</sup>
Pulp mill	Rayon pulp	t	914	633 <sup>2</sup>	627	515 <sup>25</sup>

M'ngyang						
Chemical factory	Maple fibre	t	180	166	165	106 <sup>25</sup>
"	Sodium sulphite	t	540	637	710	726 <sup>1508</sup>
"	Carbon bisulphide	t	45	85	77	106
"	Anhydrous sodium sulphate	t	50	0	20	87 <sup>18</sup>

Py'ngyang						
Corn Products Factory	Edible dextrin	t	1,300	1405 <sup>2</sup>	1,000	6,477
"	Molybdenum	t	60	274 <sup>2</sup>	45	201

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Pyongyang						
Silk textile mill	Silk goods	M	21,000	11,145 <sup>E</sup>		
"	Cordial clothing material woolen.	M	16,000	5,669 <sup>E</sup>	24,040	34,842
"	Silk twills	M	32,500	15,657 <sup>E</sup>	25-14	29,576 <sup>E</sup>
"	Plain gauze	M	5,000	2,544	10,000	
"	Raw silk	Kg.	6,700	5,683	6,600	6,357 <sup>29</sup>
"	Twist yarn	M	425	632	925	962 <sup>28</sup>

Chongjin

Soyabean oil	Oil	kg.	420	683	520	593
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Hamho

Oil based cottonseed oil			60	64 <sup>84</sup>	60	74 <sup>55</sup>
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Sinuiju

Soyabean oil	Oil	kg.	233	224	283	312 <sup>83</sup>
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Hamho

Silk textile Mill	Piqued lawn	M	15,500	4,661	0	165
"	Piqued silk	"	10,195	5,531	0	487
"	Piqued satin	"	18,500	12,750	0	365
"	Silk twills	"	59,370	33,029	0	1037
"	Rayon twills	"	16,000	2,040	59,710	29,591
"	Rayon plain tissue	"	20,000	6,067	112,090	84,025

(M)

Chart of  
Transmission Lines

1947

as of 31 December

Office of Electricity,  
Bureau of Industry

## Contents

### Statistics of Power Transmission Lines

#### 1. Statistics of transmission lines under the control of the Office of Electricity

Statistics of transmission lines under the control of  
The North West Distributing Division  
The North East Distributing Division  
The Pyöngyang Transmitting Division  
The Höch'onggang Power Generating Division  
The Changjingang Power Generating Division  
The Pujöngang Power Generating Division  
The Central Bureau of Electrical Industry

#### 2. Specifications of Lines

Specifications of 220 KV transmission lines .....	1
" 154 KV "	1.3
" 110 KV "	3
" 66 KV "	5.7 11, 13, 15, 17
" 44 KV "	11
" 22 KV "	19
" 11 KV "	39
" 35 KV "	39

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265

Power Transmission Lines under the control of  
the office of Electricity

Kind	By Voltages (KV)					Remarks
	11	22	44	66	110	
Elevated line	4.7	258,36	16,40	52,96,96	69,849	579,051
Underground			9.3			93
Total	4.7	262,936	16,218	52,70,47	69,551	569,086
Line length	14.1	450,668	30,38	52,34,49	3179,3	20,9,09
Underground			12.9			12.9
Total	14.1	651,9368	42,668	12,10,60	3976,91	20,9,09
Single pole	5.8	22,036	296	200		26,4,01
Double Single pole	1.8	6,99	28	19,353		26,4,01
Number of suspending poles			84	312		326
Number of suspension towers			40	24,61	2,4,01	2,4,01
Length	7	6,02				6,06
Total	7.8	82,476	321	26,4,01	20,9,09	20,9,09

Power transmission lines under the control of  
the North West Distributing Division

Kind	By Voltages (KV)					Remarks
	11	22	44	66	110	
Elevated line	4.7	1041,84	28,56	12,10,62		2,88,6,34
Underground			1,853			1,853
Total	4.7	1043,129	30,376	12,10,62		2,89,5,82
Line length	14.1	1162,317	67,69	30,376		36,0,345
Underground			4,510			4,510
Total	14.1	1163,827	67,69	30,376		36,0,345
Single pole	5.8	13,969	271	200		13,84,3
Double pole	1.8	2,951	27	15,483		13,95,9
Number of single poles			632	274		636
Number of suspension towers			21	36,11	2,0,76	36,2,8
Length	6	6,02				6,06
Total	7.8	16,360	319	17,665		36,328

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Power Transmission Lines under the control of  
The Suiyungang Power Generating Division

Kind	By Voltages (KV)					Total	Remarks
	11	22	44	66	110		
Elevated line line support underground				95.3	150.8		199.1
Total				95.3	150.8		199.1
Elevated line line support underground				165	470.2		635.2
Total				165	470.2		635.2
Singlepole number of supporting poles						898.12	
Doublepole number of supporting poles						343	13
Iron pole number of supporting poles						660	13
Concrete number of supporting poles						243	603
Total						243	603

Power Transmission Lines under the control of  
The Central Bureau of Electrical Industry

Kind	By Voltages (KV)					Total	Remarks
	11	22	44	66	110		
Elevated line line support underground		222.91		269.36		11.8	503.97
Total	222.91			269.36		11.8	503.97
Elevated line line support underground	618.47		1339.27		30.8		2078.57
Total	618.47			1339.27		30.8	2078.57
Singlepole number of supporting poles	1254						12.54
Doublepole number of supporting poles	4562			435			2.69
Iron pole number of supporting poles				107			10.7
Concrete number of supporting poles	86			166		35	86.166
Concrete number of supporting poles						35	
Total	2902			2104		35	5041

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202

Paper transmission lines under the control of  
the North-East Marketing Board.

Kind	Key Voltages (KV)						Total	Remarks
	3.5	22	44	66	110	132		
Substation	459	80,650	103,945				190,293	
Transf.		218					218	
Substation	939	813,400	1030,945				190,083	
Transf.	2,768	2,849,000	3,049,507				6,667,507	
Substation	700						700	
Transf.	2,040	26,914	31,471				6,011,471	
Substation	215	63,200	72,000				135,200	
Transf.	2,953	32,000	32,000				62,000	
Substation	2						2	
Transf.	66	125	125				125	
Total	215	133,555	175,542				309,097	

## Power Transmission Lines under the control of the Myanmar Transmitting Service

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*Soviet Transmission Lines under the control of  
the Electrification Power Generating Division*

*By Voltage (KV)*

Kind	11	22	44	66	110	154	220	Total	Breaks
Line Under ground	24,277		69,976	90,46			365,503	655,453	
Total	26,378		69,976	90,46			365,503	655,453	
Elevated Line Under ground	92,822		203,320	286,571			496,829	786,879	
Total	72,822		203,320	286,571			496,829	786,879	
Elevated Line Under ground	72,822		203,320	286,571			496,829	786,879	
Single Pole Double pole		441					441		
Double pole Double pole		19					19		
Total	0.007	460	203,320	286,571			496,829	786,879	
Non Trans.									
Total	221	1990					1,008	3,387	

*Lower Transmission Lines under the control of  
the Electrification Power Generating Division*

*By Voltage (KV)*

Kind	11	22	44	66	110	154	220	Total	Breaks
Line Under ground	73,379	10,427	32,302	34,001	32,302	10,427	73,379	227,480	
Total	73,379	10,427	32,302	34,001	32,302	10,427	73,379	227,480	
Elevated Line Under ground	26,471	3,110	9,949	2,288	7,031	1,406	26,471	46,850	
Total	26,471	3,110	9,949	2,288	7,031	1,406	26,471	46,850	
Single pole Double pole		15					15		
Double pole Double pole		2					2		
Total	0.007	3,857	9,949	2,288	7,031	1,406	3,857	22,480	
Non Trans.									
Total	221	3,857	9,949	2,288	7,031	1,406	3,857	22,480	

Section	No. per of lines	Name of line	Name of Control Bureau	Passing Distances	220 KV	154 KV	Supporting poles		Distance between poles	No. of tension strands	Tensile Strength (Kg)	Hast. Tensile Strength (Kg)
							No. of poles	Breaker				
N.S. Pjöngyang Sajipgwan Plant Pyongan Trans. No. 2 Pjöngyang Div.	1	220 60 ST 72.82 AL 572.82	1995	1	ST 72.82	3	536.3	991 300	74	503	Torsy	1
Pjöngyang Tisado Substation Bukdo	1	220 60 ST 72.82 AL 572.82	1995	1	ST 72.82	3	233.7	845 300	74	185	"	1
Pjöngyang Hamje Substation Nando	1	220 60 ST 72.82 AL 572.82	1995	1	ST 72.82	3	118.5	891 300	74	102	"	1
Pjöngyang Total		2939					118.5	991 300		465		
N. S. Hachon Chung Hachongang Ham-gang Jia Pjöngyang Substation	1	220 60 ST 72.82 AL 572.82	1995	1	ST 72.82	3	55.119 1029 300	2499.7	473	"		
Han-yang Kyo Hachon Hachongang Ham-gang Jia Pjöngyang Substation	1	220 60 ST 72.82 AL 572.82	1995	1	ST 72.82	3	104.0 1115 300	6496	93	"		
" " EAST Hachongang Hachonplant(No.2) 123.7	1	220 60 ST 72.82 AL 572.82	1995	1	ST 72.82	3	383.1	900 300	6	352	"	1
" Changjin Yang East Hanymam Yang Jia Yonggung 1966 Substation	1	220 60 ST 72.82 AL 572.82	1995	1	ST 72.82	3	24	503 300	201	26	"	1
Hachon gong Total		365495					1096519 1115 300		1304			
		657361					2009.619 1115		6495			
Han-gong Pjöng Changjin gong yang yang Plant Nando	2	154 60 ST 72.82 AL 572.82	1994	1	ST 72.82	6	1199.4 723 300	4.8	619	Hast	1	
N.S. Trans (No.1) Pjöngyang Pjöngyang Div.	1	154 60 ST 72.82 AL 572.82	1994	1	ST 72.82	6	1124.7 995 300	5.1	526	"	1	
Pjöngyang Nando	2	154 60 ST 72.82 AL 572.82	1995	2	ST 72.82	6	1124.7 995 300	4.8	64	"	1	
Pjöngyang Nando	2	154 60 ST 72.82 AL 572.82	1995	2	ST 72.82	6	1124.7 995 300	4.8	64	"	1	
Pjöngyang Nando	2	154 60 ST 72.82 AL 572.82	1995	2	ST 72.82	6	1124.7 995 300	4.8	64	"	1	
Pjöngyang Bukdo	1	154 60 ST 72.82 AL 572.82	1995	1	ST 72.82	3	180.9 895 300	4.8	162	"	1	
Unsan Sengyang 60.3	1	154 60 ST 72.82 AL 572.82	1995	1	ST 72.82	2	608.8 995		1371			
Total		465										

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296  
208

208

210

66 KV

Sizing  
Plant  
system 12,455 321,315 7 1041

211  
301

Suspension Insulator	elevated and ground wire	No. Contact points	Kind	Length	Rating	Remarks
Serial Number		No. of insulators	Kind	Kind	KVA	
Supplier		No. of lines	Kind	Kind		

7	23468	1	1	1	123.6 ft	1942
4	5 1348	2	2	2	115 ft	2
4	5 749	2	2	2	90 ft	2
6	5 8048	1	1	1	110 ft	2
4	5 1350	2	2	2	110 ft	2
	15496				110	
4	5 685	2	2	2	312.100 ft	1936
4	5 2238	2	2	2	67.801 ft	1937
4	5 1836	1	1	1	8.17 ft	2
4	5 576	2	2	2	12 ft	1946
6	5	1	1	1	4 ft	12
	5429				62.71 ft	
4	5 2073	1	1	1	22.9 ft	1939 212
	Insulator					6
4	5 180	1	1	1	12 ft	215
4	5 185	1	1	1	9.86 ft	1939 212
						12

212

Provinces	District	Name of Branch Line	Name of Branch Sub.	No. of Circuit Lines	Kind	No. of Fuses Max Voltage KV	Electric Wire Thickness (m m)	Distance between poles (M)	Supporting poles per unit length (m)	Type of tower Standard	Number Basic Standard	Warder	
Piengen North	Kandong	Sungkori	Sub.	46.12	1 66 60 Copper	3/2.6	3	104.4	100 1.6	2	-	-	447
Mando West	Kandong	Sungkori	Sub.	"	"	"	"	"	"	"	"	"	99
"	"	Suan Kandong	Sub.	10.34	1 66 60 "	3/2.6	3	307.2	215 100	-	-	-	99
"	"	Hannam Sungkori	Sub.	10.62	1 66 60 "	3/2.9	3	326.31298	100 1.8	6	4.6	-	84
"	"	Hannam Sungkori	Sub.	10.62	1 66 60 "	3/2.9	3	326.31298	100 1.8	6	4.6	-	84
"	"	Hannung Hwangjung	Sub.	2645	1 66 60 "	3/2.9	3	79.4	495 100	-	-	-	219
"	"	Toksan Hwangjung	Sub.	MT.8 0.9	1 66 60 "	3/2.6	3	2.7	103	-	-	-	8
"	"	Hwangpyeong Hwangjung	Sub.	175	1 66 60 "	3/2.6	3	3.9	165 100	-	-	-	11
"	"	Kurjari Hannam	Sub.	7.84	1 66 60 "	3/2.9	3	23.688	180 100	-	-	-	80
"	"	Songkhak Hannam	Sub.	364	1 66 60 "	3/2.6	3	219	87 97	-	-	-	9
Huanghae	Chae-Piengyang	Sub. 1 498	Sub.	2	66 60 "	3/2.6	1	442.7	359 200	15	742	Hat	-
"	"	Chae-Piengyang	Sub.	1 498	2 66 60 "	3/2.6	1	442.7	359 200	15	742	Hat	-
"	"	Ongjin Chaejung	Sub.	1 498	1 66 60 "	3/2.6	3	150	360 200	1.2	255	"	-
"	"	Ongjin Sub. 523	Sub.	1 498	1 66 60 "	3/2.6	1	302.4	300 220	1.5	250	"	-
"	"	Haaju Haeyangsub	Sub.	504	2 66 60 "	3/2.6	1	302.4	300 220	1.5	250	"	-
"	"	Haaju Haeyangsub	Sub.	504	2 66 60 "	3/2.6	3	13.3	200 150	-	-	47 Hat	-
"	"	Yongdang Haeyangsub	Sub.	64	1 66 60 "	3/2.6	3	13.3	200 150	-	-	47 Hat	-
"	"	Sinduk Haeyangsub	Sub.	2485	1 66 60 "	3/2.6	3	7,358	243 220	1.5	11	Hat	-
"	"	Majong Sariwon Sub.	Sub.	94.9	1 66 60 "	3/2.9	3	234.7	338 200	1.2	437	"	-
"	"	Kyejung Sub. 94.9	Sub.	94.9	1 66 60 "	3/2.9	3	234.7	338 200	1.2	437	"	-
"	"	Packchon Kyejung Sub.	Sub.	813	1 66 60 "	3/2.9	3	24.9	200 100	1.2	8	-	70
"	"	Madong Kyejung Sub.	Sub.	46	1 66 60 "	3/2.6	3	12	130 100	-	-	39 Hat	-
Piengen	Kangson	Chochon	Sub.	14.31	1 66 60 ST.	3/4.2	3	42,213	230.270	12	64	-	-
Nanudo	"	Kangson	Sub.	14.31	1 66 60 AL	6/4.2	-	-	-	-	-	-	-

Serial number	Suspension	Insulator	Elevated and ground wires	Safety transmission facilities	No. of stations	Kind and section of carrier	Neutral contact point location	Kind	Ohm or KVH	Remarks	
										Thickness (mm)	No. of strands
4 5 6730	f				-	55 Iron 4	-	-	-	1938	1.8
4 5 1110					-	1 10.7 " 4	-	-	-	1938	2.2
4 5 11850	ST	7/2.6		1 1	111.2 "	4	-	6 Injijongni Substation	2512	1938	2.6
4 5 1845	"	-		-	2 26.5 "	45	-	2	-	1940	2.6
4 5 1200	"	-		-	1 1.5 "	4	-	-	-	1943	2.2
4 5 319	ST	7/2.6	1 1	142	"	4	-	-	-	1940	2.6
4 5 1581	"	-	-	-	1 4.6 "	4	-	-	-	1939	2.6
4 5 123	"	-	-	-	-	-	2	-	-	1938	2.6
4 5 1448	ST	7/2.6	1 1	56.3	"	4	-	2	-	1935	2.1
4 5 3386	ST	7/2.6	1 1	58	"	4	-	-	Hajju Substation	1600	1935 2.1
4 5 1004	ST	7/2.6	1 1	5A3	"	4	-	-	-	1938	2.1
4 5 7104	ST	7/2.6	1 1	25	"	4	-	-	-	1936	1.8
4 5 372	ST	7/2.6	1 1	3.5	"	4	-	-	-	1936	1.2
4 5 7585	ST	7/2.6	1 1	935	"	4	-	-	3 Kyejong	1100	1937 2.1
4 5 1048	-	-	-	2	6.3	"	4	-	-	1938	2
4 5 456	ST	7/2.6	1 1	4	"	4	-	-	-	1936	1.7
4 5	ST	7/2.6	1	-	-	-	-	-	-	1943	2.6

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Section No. of poles per unit length (Km)	Electric wire kraft (mm²)	Distance between poles (m)	Supporting poles		Ward number	
			No. of poles per unit length (Km)	Iron tower standard height (m)	Basic number	Model number
Pyongyang Hwanghae Pyonggang Nampo West Sub.	568198	2	66	60 Copper	72.6	6 34.388 38 200 16 277 Ko izumi - - -
" " Nampo Sub.	26412	2	66	60 " 72.9	6 15648 289 220 23 15 Hat toni - - -	
" " No. 2 Nampo Sub	101 No. 1 Sub.	1	66	60 " 72.9	3 12057 210 100 - - - 30 Feeding 7	
" " Light Metal Light Metal 4019	1	66	60 " 72.9	3 12057 210 100 - - - 30 Feeding 7		
" " No. 1 Nampo Sub 4025	2	66	60 " 72.9	6 2896 218 220 23 26 Hat toni - - -		
" " Light Metal Light Metal 4025	1	66	60 " 72.9	3 3285 110 100 - - - - 11		
" " Light Metal Light Metal 4025	1	66	60 " 72.9	3 3285 110 100 - - - - 11		
" " Refinery Nampo Sub 2908	2	66	60 " 72.6	6 2748 289 220 23 25 Ko izumi - - -		
" " Nampo Sub 2105	1	66	60 " 72.6	3 6329 120 100 - - - 4 Feeding 19		
" " Connection 2 Sub 2105	1	66	60 " 72.6	3 6329 120 100 - - - 4 Feeding 19		
" " Nampo No. 2 Con.	Chemical Korachon Sub. 1,17	1	66	60 " 72.6	3 3.51 110 100 - - - 2 " 10	
" " Zinc Korachon 0632	1	66	60 " 72.6	3 1847 110 100 - - - - 5		
" " Taubo Nampo 47	1	66	60 " 72.6	3 14.1 210 100 - - - - 41		
" " Koryo Nampo 138	Branch Koryo Sub 5349	1	66	60 " 5	3 36.041 135 150 - - - - 58	
" " Koryo Nampo 138	Chemical Korachon Sub.	2	66	60 " 72.6	6 15.636 140 100 - - - 26	
" " Sogain Nampo 2913	1	66	60 " 72.6	3 23.139 310 225 1.8 21 Hat toni - - - 11		
" " Sogain Nampo 2913	1	66	60 " 72.6	3 23.139 310 225 1.8 21 Hat toni - - - 11		
" " Sogain Nampo 20651	2	66	60 " 72.9	6 120091 1105 220 16 80 - - -		
" " Chohak 3209	1	66	60 " 72.6	3 9.634 200 100 - - - - 32		
Hwang Hwando " Sogain Sogain	Chohak Sub.	1	66	60 " 72.6	3 9.634 200 100 - - - - 32	
" " Sogain Sogain	Switoh	1	66	60 " 72.9	3 571.9 301 100 15 4 - - - 544	
" " Sogain Sogain	Chaejang Sub.	1	66	60 " 72.9	3 571.9 301 100 15 4 - - - 544	
Pyongyang	South Pyonggang 28117	-	66	60 " 72.6	3 46832 350 220 16 350 Hat toni - - -	
Nampo " Maengjung Sub. 1	Maengjungni Sub.	-	66	60 " 72.6	3 46832 350 220 16 350 Hat toni - - -	

Jkcp 126 215  
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Suspension	Insulator	Serial number	Tension	Type	Length (in)	No. of circuit lines	Circuit no.	Cable	Thickness (in in)	Section of cable	Kind and size	Kind and size	Neutral construction	Contact point	Kind	Date	Remarks	
																	2.1	2.2
9 4 5 7202 " ST	Insulator	7/26	1 1	15762 AL 17.2	1	-	-	-	-	2 4	-	-	-	-	-	1933	12	2.1
4 5 385 " ST	"	7/26	1 1	2.3 AL 7.2	-	-	-	-	-	-	-	-	-	-	-	1941	2	2.2
4 5 582 " ST	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1942	2	2.6
4 5 1596 " ST	"	7/26	1 1	4802 3000 4	-	-	-	-	-	-	-	-	-	-	-	1943	9	2.2
4 5 162 "	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1942	1	2.7
4 5 264 " ST	"	7/26	1 1	4800 3000 4	-	-	-	-	-	-	-	-	-	-	-	1942	12	2.3
4 5 630 "	"	-	-	1	3.1 AL 3.2	-	-	-	-	-	-	-	-	-	-	1935	4	2
4 2 586 "	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1942	5	2
4 5 125 "	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1940	5	2.2
4 5 649 "	"	-	-	1	4800 3000 4	-	-	-	-	-	-	-	-	-	-	1928	10	2
4 5 1136 "	"	-	-	5	8200 3000 4	-	-	-	-	-	-	-	-	-	-	1937	5	2
4 5 1508 "	"	-	-	1	3096	-	-	-	-	-	-	-	-	-	-	1944	12	2
4 5 2085 " ST	"	7/26	1 1	2.3	4	-	-	-	-	-	-	-	-	-	-	1943	6	2.4
4 5 2080 " ST	"	7/26	1 1	20399	4	-	-	-	-	-	-	-	-	-	-	1941	6	2.4
4 5 348 " ST	"	-	-	1	2687	4	-	-	-	-	-	-	-	-	-	1943	10	2
4 5 348 " ST	"	-	-	2	37.6	"	4	-	-	-	-	-	-	-	-	1943	10	2.5
4 5 1058 " ST	"	7/26	1 1	78	4	-	-	-	-	-	-	-	-	-	-	1945	7	2.7

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Section	Name of Transmision Line	Name of Central Bureau	Length (KM)	Electric Kilowatt Capacity (KW)	No. of Crossings	No. of Poles	Distance between supporting poles		Wires between poles (m)	Insulator Material	Base Material	Base Number	Base Strength (Ton)
							Between Towers	Between Tower & Ground					
" Yogyakarta - Samarinda	" Samarinda	Samarinda Sub.	0.7	60 600	2	7/26	6	42	100 90	-	7	-	-
" Samarinda - West Kalimantan	" Samarinda	West Kalimantan Sub.	4.7	60 600	2	7/26	6	62	26.4 270 150	-	35	-	-
" Samarinda - Surabaya	" Samarinda	Surabaya Sub.	3.7	60 600	2	7/26	3	468	120 150	-	12	-	-
" Samarinda - Chatinggol	" Chatinggol	Chatinggol Sub.	1.62	60 600	2	7/26	3	38.3	6248 150	-	-	-	127
" Samarinda - Chatinggol	" Chatinggol	Chatinggol Sub.	1.62	60 600	2	7/26	3	63.5	13 300 150	-	-	-	190
Total							3408/4		2293	181	2949		
" Anju Marang - Coal mining	" Coal mining	Mineranggut Sub.	1.48	60 60	2	7/26	3	468	120 150	-	-	-	-

## 66 KV (Unsan Substation)

Bukit No 17/ Samarinda Sub.	Bukit 17/ Samarinda Sub.	1.66 60 600	7/26	3 20/84 300 100	1 6 15	1	653
" Teluk Unsan Sub.	Teluk Unsan Sub.	1.66 60 600	7/26	3 113.5 300 100	1.6 11	+	430
Piyungan " Chang Teken Sub.	Chang Teken Sub.	1.66 60 600	7/26	3 6.68 45 95	-	-	-
Yankee " Sungai Langit Sub.	Sungai Langit Sub.	1.66 60 600	7/26	3 6.68 45 95	-	-	-
Bukit " Sungai Langit Sub.	Sungai Langit Sub.	1.66 60 600	7/26	3 113.5 400 200 15 216	101	-	-
" Andal Umpu Sub.	Andal Umpu Sub.	1.66 60 600	7/26	3 161.69 289 100 16 4 825	101	-	435
" Andal Umpu Sub.	Andal Umpu Sub.	1.66 60 600	7/26	3 373.21 185 600 2 25	101	-	950
" Kango Kango Sub.	Kango Kango Sub.	1.66 60 600	7/26	3 113.5 300 100	1.6 11	+	430
" Marpo Kango Sub.	Marpo Kango Sub.	1.66 60 600	7/26	3 113.5 300 100	2 8	+	286
" Unberg Marpo Sub.	Unberg Marpo Sub.	1.66 60 600	7/26	3 113.5 300 100	2 2	+	289
" Man. Marpo	Jung Marpo	205.1 60 600	1.58	3 7.5 64 20	-	-	29
Sub.	Sub.						



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Section	Name of transmission line	No. of subst.	Kind	Length (Km)	No. of poles	Distance between poles inell tower	Supporting poles	Wooden poles	Iron poles	Alum. poles	Brass poles	Insulator	Ground rod	Total length (m)
Yingtan North Long Tancun Bukde West Tongji Sub.	1853	1	66/60	"	3/26	3	137.29	028	100	2	0	0	0	839
Yingtan South Long Tancun Sub.	1854	2	66/60	"	3/26	6	163.9	050	200	16	142	0	0	506
Yingtan Pukchindong Sub.	1855	1	66/60	"	3/26	3	166.3	066	150	16	203	0	0	549
Yingtan Jiaozhou Sub.	1856	1	66/60	"	3/26	3	166.3	066	150	16	203	0	0	549
Yingtan Shuangtang Sub.	1857	1	66/60	"	3/26	3	166.3	066	150	16	203	0	0	549
Yingtan Shuangtang Sub.	1858	1	66/60	"	3/26	3	166.3	066	150	16	203	0	0	549
Yingtan Shuangtang Sub.	1859	1	66/60	"	3/26	3	166.3	066	150	16	203	0	0	549
Yingtan Shuangtang Sub.	1860	1	66/60	"	3/26	3	166.3	066	150	16	203	0	0	549
Wuyuan Wuxi Sub.	1861	3	66/60	"	3/26	3	319.9	500	100	2	8	0	0	377
Yingtan Yankai Sub.	1862	1	66/60	"	3/26	3	34.4	300	200	0	0	0	0	129
Yingtan Pukchindong Sub.	1863	1	66/60	"	3/26	3	65.9	300	100	12	132	0	0	187
Total:		675.394			2105.377		550							5075

## 66 KV (Loji System)

Yingtan North Loji Sub	1864	1	66/60	Copper 3/2.3	3	66.9	572	200	17	197.704	0	0	0	0
Yingtan Uggijia Sub	1865	1	66/60	"	3/2.3	3	44.1	300	200	17	26	0	0	0
Yingtan Majin Sub	1866	1	66/60	"	3/2.3	3	90	298	100	0	0	0	0	237
Huji Loji Sub.	1867	1	66/60	"	3/2.3	3	144	300	100	13	7	407	0	055
Huji Huiyang Sub.	1868	1	66/60	"	3/2.3	3	144	300	100	13	7	407	0	055
Huji Huiyang Sub.	1869	1	66/60	"	3/2.3	3	144	300	100	13	7	407	0	055
Total:		119.1				359.3		16						941

## (Lengjin System) 122.57 1 Copper 2/4.2 3

North Feng Lengjin Sub. 171	1	66/60	ST. 4/3.5	6	426	549	200	24	303	101	0	0	0	0
East Feng Lengjin Sub. 172	2	66/60	AL. 4/3.2	6	426	549	200	24	303	101	0	0	0	0

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Kemal

Chart of Standard Management of Electric Well Ground Wire

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Line No.	Location	Length (km)	No. of poles	Distance between poles (m)	Supporting poles		Ground resistance (ohm)	Total length (km)
					Conductor size (mm²)	Tension tower height (m)		
1	North Changchun Sub	42	1 36 60 Coffer 7/2.6	3 126	289 130 1.6	326.7400	-	-
"	East Song Changchun Sub	42	1 36 60 Coffer 7/2.6	3 126	100 100 -	-	-	8
"	Hakko Line	121	0.6 1 66 60 " 7/2.6	3 1.8	100 100 -	-	-	-
"	Hakko Sub.	121	0.6 1 66 60 " 7/2.6	3 1.8	100 100 -	-	-	-
"	Juk. Wangton	3.5	1 66 60 " 7/2.6	3 1.5	100 100 100 -	5.8944	-	-
"	Sin. Yungjin 3.5	1 66 60 " 7/2.6	3 1.5	100 100 100 -	5.8944	-	-	-
"	Tama Abang Sub	22.6	1 66 60 " 7/2.6	3 1.5	100 100 100 -	20.5474	-	-
"	Hanyang Sub	22.6	1 66 60 " 7/2.6	3 1.5	100 100 100 -	20.5474	-	-
"	Sungju To. sub 1.7	12.6	1 66 60 " 7/2.6	3 1.5	100 100 100 -	16.9466	-	-
"	Sungju Sub 12.6	12.6	1 66 60 " 7/2.6	3 1.5	100 100 100 -	16.9466	-	-
"	Chul Chongjin	30.1	1 66 60 " 7/2.6	3 1.5	100 100 100 100 -	30.1485	-	-
"	Chul Chongjin	30.1	1 66 60 " 7/2.6	3 1.5	100 100 100 100 -	30.1485	-	-
"	Parki Chongjin 2.1	2 66 60 ST 7/2.6	3 1.5	100 100 100 -	4.8747	-	-	-
"	Stek Chongjin Sub	2.1	2 66 60 ST 7/2.6	3 1.5	100 100 100 -	4.8747	-	-
"	Pink Chongjin 0.5	2 66 60 Coffer 7/2.6	3 1.5	100 100 100 -	5.8944	-	-	-
"	Tong Paruktoy Sub	0.5	2 66 60 Coffer 7/2.6	3 1.5	100 100 100 -	5.8944	-	-
"	Sipjang Chongjin	38.7	1 66 60 " 7/2.6	3 1.5	100 100 -	38.7467	-	-
"	Sipjang Chongjin	38.7	1 66 60 " 7/2.6	3 1.5	100 100 -	38.7467	-	-
"	Giching Abang Sub	14.26	1 66 60 " 7/2.6	3 1.5	100 -	-	-	-
"	Giching Abang Sub	14.26	1 66 60 " 7/2.6	3 1.5	100 -	-	-	-
"	Musa Sub	7.2	2 66 60 ST 7/2.6	8 42.4	92 579250 2.1 24	447	-	-
"	Musa Sub	7.2	2 66 60 ST 7/2.6	8 42.4	92 579250 2.1 24	447	-	-
"	Hating Hwangwan	122	Kaunggym 4.1 66 60 Coffer 7/2.6	3 12	256 2.1 19 8	-	-	-
"	Hating Hwangwan	122	Kaunggym 4.1 66 60 Coffer 7/2.6	3 12	256 2.1 19 8	-	-	-
Total		3242			13155		1125	

## 66 KV (Kilchu System)

North Yengjin Kitchu Sub	46.6	1 66 60 Coffer 7/2.6	3 1.5	290 1.6	-	440
Hakko	grung					
"	Kitchu Sub	29.8	1 66 60 " 7/2.6	3 1.5	250 1.6 4 701	- 182

22)

Serial Number for suspension	Suspension method & the number of insulators	Elevated and Ground Wires (In m.)	Kind of Wires	Length (in m.)	No. of circuits (incl. no. of conductors)	Safety Transmission facilities	Location	Neutral Contact point kind	Date of construction	Remarks	
4 5	4260	1	1	30.15	10.2	-	1	Ohio	1934	2.5	
4 5	1524	1	1	0.9	4	-	1	XVA	1941	2.5	
4 5	1914	1	1	0.5	4	-	1		1943	2.5	
4 5	2195	1	1	2.2	4	-	1		1942	2.6	
4 5	1499	1	1	1.8	4	-	1		1941	2.6	
4 5	3930	1	1	2.4	4	-	3		1940	2.5	
4 5	3240	1	1	32.9	10	-	-		1939	2.3	
4 5	2491	1	1	32.3	10	-	-		1940	2.3	
4 5	860	1	1	2.45	4	-	-			2.6	
4 5	4500	1	1	4	45	-	2				
4 5	1462	1	1	15	32.9	12	4				
4 5	1462	1	1	15	32.9	12	75				
4 5	1988	1	1	250	4	-	4	-	1939	2.3	
4 5	4607					308.3				93KV being used	
4 5	5755					1	92.8	210	4	1938	2.6
4 5	4408					1	229	4		1937	2.3

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Power frequency Mv Voltage No. of Circuit Length (Km)	Kind	Electric wire no. of cables	Distance between poles	Supporting poles	
				Iron tower number	Meter basic number
Total	63.4		2021	4	622
(Hochspannung System)					
Hochspannungsnetz Center Bureau					
Hochspannungsnetz Sub.					
" Sungai 23					
" Sungai Pinggan 32.15					
North Sumatra					
East Sumatra					
" Sungai Pinggan 32.7					
" Sungai Pinggan 32.9					
" Sungai Pinggan 33.4					
" Sungai Pinggan 33.6					
" Sungai 33.7					
" Sungai 33.9					
" Sungai 33.9					
" Sungai Pinggan 34.2					
Total	2627		7826	8	9224
(Pongung System)					
Hongkong/North Sumatra Pongung					
Namda east Hongkong Sub.					
" Hongkong Sub 1					
" Hongkong Sub 2					
" Wenzhou Pongung Sub					
" Wenzhou Pongung Sub 1					
" Wenzhou Pongung Sub 2					
" Olson China Nanhai Shantou Suzhou 1/1.0					
" Olson China Nanhai Shantou Suzhou 2/1.0					
" Kalma Wenzhou					
" Kalma 1.0					
" Kalma 1.0 (x02)					
" Suez					

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Suspension Insulator	Elevated and Ground wires	Safety transmission facilities	No. of stations	Neutral point	Kind	Remarks chart of Standard Arrangement of Electric wire Ground wire
Serial number	(#m m)	(#m m)	Kind	Location	Ohm or KVA	Date of construction
9883	Osaka prefecture	71.7				1938 2.6
4 5 2281	"	4 1443 " 4				1939 2.6
4 5 4358	"	4 3812 " 4				1939 2
4 5 3622	"	1 52.29 " 4	1 3			1939 2
4 5 4107	"	2 81.8 " 4	1			1939 2.6
4 5 2939	"	1 18.3 " 4				1943 2.6
4 5 1400	"	1 8.4 " 4				1938 2
4 5 3945	"	1 58.96 " 4				1939 2
4 5 "		" 4				1939 2
	36122	2953				
4 5 2154	Stata ST 7/2.6	1 2 2.5 " 4				1937 2.6
4 5 6274	Stata Insulated	2 392 " 4				1941 2.6
4 5 16644	ST 7/2.6	1 2 70.9 " 4	1 6			1936 3.8
4 5 2100	"	1 10 " 4				1936 2.6
4 5 2220	"	4.0 " 4				1946 2.6

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Section Name of transmission line Name of circuit Circuit Length (KM)	Kind	No. of frequencies	No. of phase wires	No. of circuit lines	Electric wire thickness (mm)	Distance between poles maximum (m)	Supporting poles			Warden
							Iron pole Number Standard	Iron tower Number Standard	Wire Number Standard	
North Anhui Line Anhui Sub 33.5	1	66	60	Copper	3	1.2.4	290/100	-	4	305
" Ningbo Sub 24.3	1	66	60	"	3	1.2.6	292/100	-	-	210
" Ningbo Ningbo 24.3 Ningbo Ningbo	1	66	60	"	3	1.2.6	290/100	-	-	246
" Ningbo Ningbo 24.3 Ningbo Ningbo	1	66	60	"	3	1.2.6	290/100	-	-	318
" Ningbo Ningbo 28.9 Ningbo Sub	1	66	60	"	3	1.2.6	292/100	-	-	71
" Taicang Ningbo 23.23 Taicang Sub	1	66	60	"	3	1.2.6	290/100	-	-	4
" Yongtai Ningbo 23.19 Yongtai Tongning	1	66	60	"	3	1.2.6	292/100	-	-	1319
Connec. Tongning 10						11.5.6		461		
Total		29059								
(Changjingang System)										
Yangtze Changjiang Yangtze Kulei 45.91	1	66	60	Copper	3	1.2.6	150/100	43	2.0.1	357
Wando Yangtze Yangtze										89
North Chik Kulei 23.75	1	66	60	"	3	1.2.6	225/223/85	-	-	422
East Tong Yangtze 16.6										
Chang Jiang Changjiang Jiang Jia Pumping Station	1	66	60	"	3	1.2.6	290/100	-	-	157
North Haining Changjiang East 222 Plant 18.4	1	66	60	"	3	1.2.6	433/100	-	2	461
Haining Sub										
Chang Changji Changji Jiang Connection 20.5	1	66	60	"	3	1.2.6	4600/190/100	-	-	13
Kulei 15.2										
Hanging Kung Sangyee Hanging North 14.92	1	66	60	"	3	1.2.6	32849/225/70	-	-	967
Wando North 14.92 Kulei Sub										
Pyongan West Bukdo										65
Hanging Koam Hanging Koam	1	66	60	"	5.5	3	1.2.13/16.2/6.0	-	-	2757
Total 215639					649.63		4	35		

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Suspension		Insulator		Elevated and ground wire		Safety Transmission facilities		Neutral Contact Point		Remarks	
Serial number	Suspension	Mark	Type	Number	Length	Kind	No. of Coax stations	Location	Kind	Ohm or KV.A.	Chart of standard carrying capacity of electric wire ground wire
4	5	5281	Gahan insulator	2	34.5m 4	Kind A	3	1938	2.6	1	
4	5	4366	Matsu kaze	2	23 " 3/2	Kind A	2	1939	2.6	11	
4	5	6311	Kyoto insulator	2	31.25 " 4	Kind A	2	1940	2.6	11	
4	5	6.2	"	2	36 " 4	Kind A	3	1940	2.6	11	
4	5	1199	"	2	7.2 " 4	Kind A	2	1940	2.6	11	
4	5	145	"	2	3.75 " 4	Kind A	2	1946	2.6	12	
		33406									
4	5	6125	-	1	233959.5m	-	4	1933	2.6	12	
4	5	1742	-	1	7.8 "	-	4	1941	2.6	1	
4	5	7481	-	2	40.58 "	-	4	1939	2.6	11	
4	5	3152	-	1	19 "	-	11	1949	2.6	12	
4	5	274	-	-	-	-	11	1941	2.6		
4	5	1829	-	2	19398.5m 4.0	-	11	1939	2.6	17	
4	5	1290	-	1	4746.5m 4.0	-	1	1939	2.6	7	
		62912			204.569						

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Suspension Line (latter)	Elevated and Ground wires	Definitemission facilites	No. of lines	No. of circuit lines	Helicopter lines	Kind	Kind	Remarks
Serial number								
5	4 5 880 Kage ST 3/2.6	1 2 85 244 + 4	-	2	1 Chung daeri Plant	3506 1923 3	21	Chu-Tek Standard series No. 229
4	5 849 " ST 3/2.6	1 2 28 + 4	-	-	-	1923 2.6	North 38°	
4	5 465 " ST 12.6	1 1 28 + 4	-	-	-	1949 2.1	5	
4	5 555 " ST 3/2.6	1 2 83 + 3	-	-	-	1936 2.9	12	
4	5 869 + ST 3/2.5	1 1 34 + 4	-	-	-	1943 2.6	3	
4	5 1044 Kage ST 3/2.6	1 1 4.2 + 4	-	-	-	1925 2.1	12	
4	5 1554 + ST 3/2.6	1 1 88 + 4	-	-	-	1931 2.1	12	
4	5 4077 Kage Jumulata	- - 2 24 + 45	-	-	-	1938 2.6	12	
4	5 4854 "	- - 2 12.7 + 65	-	-	-	1938 2.6	12	
	53088	2588						
	589857	3237317						

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## Supporting Poles



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Serial number	Suspension fusible	Pillcoat insulator	Ground wire	Insulated Wire	Security Communication Equipment		Neutral Contact Point	Rate of use	Remarks
					Number of leads	Location			
2	3	56 ft min 300 parallel ground	1	9189	min 40	old.		3.5	1934
2	3	18 ft min 210 parallel ground	1	8189	min 40	old.		4.0	1.2
2	3	23 ft 935	1	14877	4.0	"			1.2
2	3	22 ft 935	1	14877	4.0	"			1.2
2	3	186 ft min 118 parallel ground	1	28187	40	old.		4.0	1934
2	3	9 ft min 3 min parallel ground	1	2829	40	"		4.0	1.2
2	3	27 ft 930	1	1838	40	"			1939 1.2
2	3	32 ft 292	1	18267	40	"			1939 1.2
2	3	90 ft 4762	1	19416	40	"			1939 1.2
2	3	45 ft 502	1	1934	40	"			1939 1.2
2	3	130 ft 665	1	1868	40	"			1938 1
2	3	180 ft 1176	1	3428	40	"			1938 1.2
2	3	168 ft 1333	1	36024	40	"			1840

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Suspension Insulator	Petticut Insulator	Ground Wire	Security Communication Equipment	Contract Number	Neutral Point	Location	Kind	Other or KVA	Remarks	
									Standard Voltage of the ground wire	Date of use
2	3	126 mm 462 Insulator	Telephone Lines	1 6507 104	4.0	-	Add	-	March 1940	1.2
2	3	30 " 280	Telephone Lines	1 2850 "	4.0	-	"	-	1944	1.
2	3	295 " 949	Telephone Lines	1 13.621 "	4.0	-	"	-	1942	1
2	3	54 " 450	Telephone Lines	1 11448 "	4.0	-	"	-	1940	1
2	3	90 " 122 " 122 Insulator Manufactured	Telephone Lines	1 6500 "	4.0	-	Add	-	May 1940	1.1
2	3	156 " 600 "	Telephone Lines	1 13320 "	4.0	-	"	-	1940	1.2
2	3	30 " 120 "	Telephone Lines	1 9038 "	4.0	-	"	-	1938	1.2
2	3	147 " 455 "	Telephone Lines	1 9169 "	4.0	-	"	-	1939	1.2
2	3	6 " 24 "	Telephone Lines	1 2288 "	4.0	-	"	-	1939	1.2
2	3	28 " 293 "	Telephone Lines	1 4626 "	4.0	-	"	-	1941	1.2
2	3	32 " 300 "	Telephone Lines	1 4235 "	4.0	-	"	-	1941	1.2
2	3	63 " 63 "	Telephone Lines	1 2426 104 cable 745	4.0	-	"	-	1939	325
3	260 " 171 "	Telephone Lines	Telephone Lines	1 3500 104	4.0	-	"	-	1942	375
3	96 " 345 "	Telephone Lines	Telephone Lines	1 9,500 "	4.0	-	"	-		

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Suspension jacket number	Wire number	Wire size	Wire make	Insulator number	Length (Km)	Weight (kg)	Kind of line	Security/communication equipment	Number of cable stations	Number of switch stations	Neutral contact inst.	Kind of chm or KVA	Spent/damaged electric kind and date	Remarks	
2 2	26	88 + 620	Alum insulator kage	-	1	6587 AL	-	-	-	-	-	-	-	Oct. 1982	1
2 2	2	68 + 505	Alum insulator kage	-	1	16,519 30m 4.0	-	-	-	-	-	-	-	Sep. 1983	1
2 2	2	50 + 1600	Alum insulator kage	-	1	20,639 " 4.0	-	-	-	-	-	-	-	March 1984	1
2 2	3	31900 300	Alum insulator	-	1	32,615 " 4.0	-	-	-	-	-	-	-	May 1985	1
2 3	3	180 + 866	Alum insulator	-	1	16.7 " 4.0	-	-	-	-	-	-	-	Aug. 1987	1
2 3	3	70 + 122	Alum insulator	-	1	4.7 " 4.0	-	-	-	-	-	-	-	Aug. 1989	12
2 3	3	190 " 882	Alum insulator	-	1	33.2 " 4.0	-	-	-	-	-	-	-	1991	1
2 3	3	1661 " 875	Alum insulator	-	1	34.5 " 4.0	-	-	-	-	-	-	-	1991	1
2 3	3	320 " 828	Alum insulator	-	1	20.3 " 4.0	-	-	-	-	-	-	-	Nov. 1991	1
2 3	3	342 " 1100	Alum insulator	-	1	236 " 4.0	-	-	-	-	-	-	-	1992	1
2 3	57	222	Alum insulator	-	1	6.6 " 4.0	-	-	-	-	-	-	-	1992	1
2 3	3	305 " 1500	Alum insulator	-	1	39.8 " 4.0	-	-	-	-	-	-	-	Aug. 1992	1
2 3	356	499	Alum insulator	-	1	10.95 AL 4.0	-	-	-	-	-	-	-	1992	1

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Location	Kind	No. of Poles needed	Total Voltage	Distance between holes	Supporting Poles	
					Open Face	Jungle
Huang North Yenan	Haojue pyrite	7.6	1	22 to 60 Copper 1/2.3	28.8183	90
- Hua West Yenan	"	"	"	"	"	"
" "	Yutong	8.2	1	22 to 60 " 1/2.3	107	90
" "	Yutong	8.2	1	22 to 60 " 1/2.3	107	90
" "	Kyan Yutong	8.25	1	22 to 60 " 1/2.3	100	90
" "	Long Xianlong	8.25	1	22 to 60 " 1/2.3	100	90
" "	Yung Lantian	21.9	1	22 to 60 " 1/2.3	5.0	90
" "	Yung	21.9	1	22 to 60 " 1/2.3	5.0	90
" "	Nanyang Songhua	1	1	22 to 60 " 1/2.3	12.3	150.00
" "	Mine Shapin 4.1	1	1	22 to 60 " 1/2.3	12.3	150.00
" "	Mine	"	"	"	"	"
" "	Yuciang	8.2	1	22 to 60 " 1/2.3	5.0	90
" "	Kaiping	"	"	"	"	"
" Haili Branch Total		282.34			87.502	22
North West						
Distributing Division						
Ground Total		105.899			36	162
North Feng - Feiyangfu						
" East Feng - Huayuan						
Nine Mine	1.661	1	22 to 60 Copper 1/2.5	3	130.60	-
Huanghefu Total		287.001			22	433.0
Kang Central Yenan	Haojue	347	1	22 to 60 Copper 1/2.9	3	1041.100
Gold Mine	Gold	"	"	"	65	-
" "	Ying Yuciui	8.3	1	22 to 60 " 1/2.3	5.0	-
" "	Qing Feiyang	"	"	"	5.0	-
" "	Wan Chiaotuo	7.2	1	22 to 60 " 1/2.6	3	9.6
" "	Changde Yuciui	7.2	1	22 to 60 " 1/2.6	3	9.6
" "	Haiyang Yuciui	3.3	1	22 to 60 " 1/2.6	3	9.9
" "	Yuciui Haili	3.3	1	22 to 60 " 1/2.6	3	9.9
" "	Changde Sub Haili	18.9	1	22 to 60 " 1/2.0	3	57.109
" "	Hengye Haojue	18.9	1	22 to 60 " 1/2.0	3	57.109
" "	Yudong Haojue	15.5	1	22 to 60 " 1/2.3	3	46.5
" "	Gold Mine	Sub 232	"	"	284.50	-
" "	Miaodong	33.8	1	22 to 60 " 1/2.3	3	101.3
" "	Miaodong	33.8	1	22 to 60 " 1/2.0	3	119.60
" "	Hai - Yudong	232	1	22 to 60 " 1/2.3	3	314.285
" "	Kunming	105	1	22 to 60 " 1/2.3	3	285.00
" "	Sinping	"	"	"	"	"
Project Areas						

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Suspension	Belts	General	Securing	Communication	Equipment	Remarks	Central	
							Contract	Print
mechanical	handw.	wire					No. 1	
initial	handw.						Oct. 1933	1.2
handw.							Dec. 1938	1.2
handw.								1.2
2	3	44	telephones	4.0	add		Apr. 1938	1.2
2	3	822	lined	4.0	"		Jan. 1941	1.2
2	3	144	4.0	"	"		Nov. 1938	1
2	3	936 + 609	2.5	4.0	"		June 1940	1
3	51 + 180	"	21.9	4.0	"		Dec. 1936	1
2	3	150 + 313	4.1	4.0	"		June 1943	1
2	3	"	8.2	4.0	"		Jan. 1939	1
2	3	83	1.611	4.0	"		June 1943	1
3	4	5023 Metal Kage 10 ft	3.48	4.0	"		June 1943	1
2	3	594 + 999	1.25	4.0	"		Jan. 1939	1
2	3	619 Xpm 6 Japan	3.7	4.00	"		June 1943	0.9
4	5	180 + 161	3.3	4.0	"		Oct. 1941	1
2	3	2050 Metal Kage "C" 1/2" 29	19.2	4.0	Ind. add. - 1		June 1943	1
2	3	819 + 366 Metal Kage	13.5	4.0	add. - 1		Oct. 1941	1
4	8	1432 + 817 Metal Kage	3.38	4.0	"		Feb. 1944	1
2	3	1306 + 230	105	4.0	"		Oct. 1941	1

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Section	Name	Voltage Kv	Current Amp	Type of Line	Distance between poles (m)	Supporting Poles per meter	Total Length (m)	Ground Conductors	
								Conc. (kg/m)	Insulation Strength (kv)
Kang Central Power with Power 100	Kojo Plant 136	22 60	Copper 1/2.2	3	408 200	58	-	-	213
	Kojo Sub.								
" Changjon	Changjon Plant 3802	22 60	Copper 1/2.6	3	105.1 197	100	-	-	396
	Changjon Sub.								
" Hwangju	Hwangju Plant 874	22 60	Copper 1/2.6	3	262 230	75	-	-	99
	Hwangju Sub.								
" Char'On Yonch'ea Branch 135/188	Char'On Yonch'ea Branch 135/188	22 60	Copper 1/2.3	3	564 140	50	-	-	34
	Char'On Yonch'ea Sub.								
" Sanga	Sanga Sambang Mine 113	22 60	Copper 1/2.3	3	34 380	70	-	-	130
	Sanga Mine								
" Sokcho	Sokcho Hwanggang 1 Sub. 14.0	22 60	Copper 1/2.6	3	42.0 197	70	-	-	208
	Sokcho Sub.								
<u>Central Power Division Total</u>					11849		88		2816
Kang North Kalma	Kalma 136	22 60	Copper 1/2.6	3	4620 5	55	-	-	3
Won East Branch	Branch 136								
" Murphyng	Murphyng Chemical 1337	22 60	Copper 1/2.6	3	5331 34	65	-	-	57
	Murphyng Chemical								
" Murphyng	Murphyng 14851	22 60	Copper 1/2.6	3	47800 180	90	-	-	108
	Murphyng Refinery								
" Munchon	Munchon Coal Mine 1200	22 60	Copper 1/2.6	3	33500 200	50	-	-	90
	Munchon Coal Mine								
" Simpung	Simpung Munchon Coal Mine 5409	22 60	Copper 1/2.6	3	1621 210	50	-	-	138
	Simpung Coal Mine								
" Puksong	Puksong Munchon 7300	22 60	Copper 1/2.6	3	21920 210	50	-	-	136
	Puksong Sub.								
" Sogok	Sogok Wonsan Sub 5800	22 60	Copper 1/2.6	3	24200 180	95	-	-	59
	No. 2 Sogok Sub								
" Kalma	Kalma Sub 1/2 2778	22 60	Copper 1/2.6	3	8211 210	60	-	-	167
	Kalma Sub								
" Sangdong	Sangdong 3300	22 60	Copper 1/2.6	3	11320 270	50	-	-	60
	Sangdong Sub								
" Anyang	Anyang Susong 13600	22 60	Copper 1/2.6	3	41800 210	60	-	-	220
	Anyang Sub								

Suspension insulator	Pedestal insulator	Ground insulator with pedestal	Security Communication Equipment	Neutral Contact Point	Remarks
Serial number	Number of jacketed conductors	Kind of jacketed conductors	Number of cord stations	Kind of switch stations	Date of Use
2 3 570	3	336	4.0	6th	Standard (a) insulators of electrical wire & ground wire Feb. 1943 1
2 3 5361	1	3510	4.0	-	Dec. 1943 1.1
2 3 189	1	8.74	4.0	-	Dec. 1941 1.1
2 3 469	1	1.88	22	-	Nov. 1947 11
3 4 259 + 349	1	11.3	4.0	-	Feb. 1947 1.5
2 3 419 + 559	1	13.97	4.0	-	April 1947 1.5
2 1282 + 4401		22.359			Sept. 1947 1.5
2 3 189 + 15	1	9.150	4.0	6th	March 1939 1
2 3 90 + 35	1	10.77	4.0	-	July 1939 2.6
3 4 2914 + 55	1	14.360	4.0	-	Aug. 1936 1
2 3 226 + 641	1	11.260	4.0	-	Aug. 1936 1
2 3 316 + 252	1	5409	4.0	-	Aug. 1932 1
2 3 168 + 408	1	7.360	4.0	-	Dec. 1939 1
2 3 2869 + 6	1	5.905	4.0	-	Aug. 1939 1
2 3 435	1	2498	4.0	-	Feb. 1936 1
2 2 194 + 196	1	3840	4.0	-	Feb. 1945 1
2 4 2146 + 10	1	13600	4.0	-	Nov. 1938 1

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Section Name Country Branch Province	Length (km)	Kind	Number of Crosses	No. of Frequencies	No. of Mileage	Electric Wire Standard (μm)	Distance between poles (m)	Type of pole Used	Name of tower	Supporting Poles	Order No.	Terminated at
Wire	Cable	Structures	Wire	Poles								
Wenan Branch (Kaungwando)	Total	72.835				2855.4					1164	
Kaungwando	Total	295.645				906.334					3980	
Hainan North Ullin	Jingning	15400	1	22	60	Copper 7/2.6	3	12120	298.50	-	576	
Jingning East	Ullin	60400										
Vando												
"	Chinjiang	1025	1	22	60	"	7/2.6	3	39205	115.50	220	
"	Sengling	84.6145	1	22	60	"	7/2.6	3	9425	298.50	3	
"	Tan Sengling	1150										
"	Kewen	1140	1	22	60	"	7/2.6	3	9380	290.50	625	
"	Kewen	2626	1	22	60	"	7/2.6	3	12120	290.50	151	
"	Kewen	215	1	22	60	"	7/2.6	3	24600	245.50	156	
"	Kewen	9200	1	22	60	"	7/2.6	3	28200	200.50	113	
"	Kewen	15.1	1	22	60	"	7/2.6	3	28200	200.50	200	
"	Kewen	Galaline	1	22	60	"	7/2.6	3	28200	200.50	215	
"	Chinjiang	123.5800	1	22	60	"	7/2.6	3	16800	270.50	800	
"	Chinjiang	1136										
"	Wugang	1905	1	22	60	"	7/2.6	3	1545	225.50	159	
"	Wugang	1140										
"	Yandong	10800	1	22	60	"	7/2.6	3	32400	157.50	147	
"	Gold Mine	11200										
"	Pompo	11200	1	22	60	"	7/2.6	3	12120	180.50	141	
"	Pompo	117										
"	Wensu	11200	1	22	60	"	7/2.6	3	3933	190.55	161	
"	Yandong	10844	1	22	60	"	7/2.6	3	3933	285.60	2864	
"	Yandong	11200										
"	Minsan	1117	1	22	60	"	7/2.6	3	3234	86.60	9128	
"	Minsan	1117										
Wenan Branch (Huangpingvando)	Total	111829				515323						
Hainan North Wan'an Branch	Total	244664				953.877						
Wan'an												

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Suspension		Petroleum		Ground		Insulator		Insulator		Wire		Security Communication Equipment		Neutral		Contract Point		Remarks		
Serial	Number	Kind	Size	Kind	Size	Kind	Size	Kind	Size	Kind	Size	Kind	Size	Location	Kind	Size	Or	KVA	Date of Use	Standard a no segment electrical power line
2 3 2376	Osaka Osaka Japan Matsuda Matsuda	Telegraph line	-	1	40400	High	4.0	1/2.6	-	Add.	-	-	-	Nov. 1939	-	1	-	-	Nov. 1939	1
2 3 239	Osaka Osaka Japan Matsuda Matsuda	Telephone line	-	1	11425	"	4.0	-	-	-	-	-	-	July 1944	-	1	-	-	May 1930	1
2 3 960	9 580	Telephone line	-	1	44260	"	4.0	-	-	-	-	-	-	Nov. 1939	-	1	-	-	Nov. 1939	1
2 3 574	579	Telephone line	-	1	9200	"	4.0	-	-	-	-	-	-	Sept. 1939	-	1	-	-	Sept. 1939	1
2 3 120	125	Telephone line	-	1	9400	"	4.0	-	-	-	-	-	-	May 1930	-	1	-	-	Nov. 1932	1
2 3 188	444	Telephone line	-	1	10850	"	1/2.6	-	-	-	-	-	-	Sept. 1940	-	1	-	-	Dec. 1935	1
3 4 924	41	Telephone line	-	1	5082	"	4.0	-	-	-	-	-	-	May 1935	-	1	-	-	Nov. 1939	1
2 3 1269	12	Telephone line	-	1	9846	"	4.0	-	-	-	-	-	-	Dec. 1941	-	1	-	-	Dec. 1941	1
3 3 1317	102	Telephone line	-	1	12841	"	4.0	-	-	-	-	-	-	Nov. 1939	-	1	-	-	Nov. 1939	1
3 4 2001	18	Telephone line	-	1	8900	"	4.0	-	-	-	-	-	-	Dec. 1941	-	1	-	-	Dec. 1941	1
3 4 692	8	Telephone line	-	1	10107	"	4.0	-	-	-	-	-	-	Dec. 1941	-	1	-	-	Dec. 1941	1

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Section	Name of circuit line	Name of circuit line	Kind	No. of Tie-in wires	Length (Km)	Electric Wire Type	Cross Section (mm <sup>2</sup> )	Distance between poles (m)	Supporting Poles	Welded concrete		Total Weight kg/m
										Iron Tower Standard	Concrete Poles	
North Sichuan	Chongqing East	Chongqing Sub.	1	22	60	Copper	6.5	3	50.191	50	2	29
North Sichuan	Chongqing West	Chongqing Sub.	1	22	60	"	6.5	3	53.452	50	2	31
Chongqing	131	Chongqing Sub.	1	22	60	"	7/2.3	3	126.57	50	2	117
Jinpo Chongqing	138	Chongqing Sub.	1	22	60	"	7/2.3	3	126.57	50	2	154
Sendok	Sendok 129	Sendok Sub	1	22	60	"	7/2.0	3	150.132	50	2	42
Chinbul	Puyekhut -san Chinbul 132	Chinbul Sub	1	22	60	"	7/2.0	3	41.4302	45	2	11
Pingshan	Guanbulan Pingshan 122	Guanbulan Sub	1	22	60	"	7/2.0	3	216.337	45	2	195
Unpo	Hongqiu Unpo Sub	Hongqiu Sub	1	22	60	"	5.0	3	115.52	50	2	126
Hongqiu	Hongqiu Chungbo 20.1	Chungbo Sub	1	22	60	"	7/2.6	3	603.65	50	2	509
Songdor	Hongting Songdor Sub	Hongting Sub	1	22	60	"	7/2.0	3	28.242	50	2	1928
Wangdok	Dalang Sub	Dalang Sub	1	22	60	"	7/2.6	3	89.1199	50	2	5
Haksø	Waryong Haksø Sub	Waryong Sub	1	22	60	"	7/2.3	3	113.116	50	2	316
Yangju	Pukta Sub	Pukta Sub	1	22	60	"	7/2.3	3	894.3237	50	2	57
Yongam	Yongam Sub	Yongam Sub	1	22	60	"	7/2.3	3	989.3238	50	2	40
Pudong	Wugdok Pudong Sub	Wugdok Sub	1	22	60	"	7/2.3	3	2950.80	50	2	80

Suspension Insulated Serial number	Point of break Number of splices	Ground Wire Thickness Type number	Security Communication Equipment Telephone lines Circuit line Kind	Neutral Contact Point Number of Cable stations	Location Switch stations Length (km) No. of cables	Kind	Remarks Standard arrangement of electric wire splices
3 106	949	Osaka Osaka	949	1	300 0.5	Add	Nov. 1935 0.9
3 300 + 119	1	1	35	-	-	-	March 1935 1
2 3 36	Nihon Nihon bashi bashi	1	4.2 "	4.0	- 4	-	May 1939 1
2 3 36 + 325	4	1	6.0 "	4.0	- 4	-	Dec. 1944 1
2 3 9 + 42	"	1	13.8 "	4.0	-	-	Dec. 1931 0.85
2 3 3/2 + 384	"	1	7.2 "	4.0	- 4	-	May 1934 0.85
2 18 + 45	Osaka	1	6.5 "	4.0	-	-	Aug. 1941 1
2 3 1790	Nihon Nihon bashi bashi	1	10.1 "	26.6	- "	-	Jan. 1941 1
2 3 693	Nihon Nihon bashi bashi	1	-	-	-	-	April 1945 0.9
3 198	Osaka Osaka 1962	1	29.7 3inch	4.0	7/20	Add	1
4 5 11370	Hi 1924 Osaka Osaka	1	18.732 "	4.0	- "	-	Dec. 1948 1.2
2 3 555 "	326 "	1	8.040 "	4.0	- "	-	July 1939 1.2
3 155 "	- "	1	3900 "	4.0	- "	-	July 1949 1
2 3 116 "	- "	1	3435 "	4.0	- "	-	July 1942 1
3 3 132 "	- "	1	3358 "	4.0	- "	-	Dec. 1939 1
3 90 "	- "	1	2650 "	4.0	- "	-	Dec. 1937 1

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Section Transmis- sion Line Name & Control Bureau Provinces	Distance between poles	Supporting Poles		Wooden Tin-concrete Metal Bamboo Others	Total
		Iron Tower	Non-Pole		
Hanging East Yeng Yeng Kondok Sub. 3421	1 22 60	Copper 3/23	3 16267 210 50	-	97
" " Sengguk Haksob Sub. 1864	1 22 60	" 3 3	3 8292 60 50	-	28
" " Teksong Lukting Sub. 1723	1 22 60	4 3/23	3 376720 50	-	269
" " Lingdok Kondok Sub. Kondok 22113	1 22 60	" 3/23	3 6339 265 50	-	82
" " Wiyatik Kondok Branch Sub. 1941	1 22 60	" 3/23	3 6623 265 50	-	213
" " Wiyatik Kondok Branch Sub. 340	1 22 60	" 3/23	3 6352 138 50	-	1
" " Wayang Kondok Sub. 1834	1 22 60	" 3/23	3 6966 688 50	-	39
" " Pekit Kondok Sub. 1860	1 22 60	" 3/23	3 6935 575 50	-	91
" " Sokkiu Sipukting Sub. 1721	1 22 60	" 3/23	3 363575 50	-	247
" " Pukekting Sipukting Sub. 1860	1 22 60	" 3/23	3 384 737 50	-	1
" " Simpuhing Nahung Sub. 1721	1 22 60	" 3/23	3 5440 310 50	-	35
" " Gwin Sipukting Sub. 1722	1 22 60	" 3/23	3 66130 60	-	65
" " Iron Mine Garone					-
" " Kondok Kondok Mine Kondok 3056	1 22 60	" 3/23	3 1023 160 50	-	4
Tancharon Branch (Thapar)					-
Total 18640					338483
Hang North Hangau Sojingsu					229
Yeng East Yengau Sub. 14643	1 22 60	Copper 3/23	3 43729 178 60	-	137
Pukito Kilchesub.					-
" " Optok Optok Sub. 5459	1 22 60	4 3/23	3 23362 160 60	-	125
" " Changpuk Mansuk Sub. 158456	1 22 60	4 3/23	3 25368 700 60	-	608
" " Agan Kachukagan Sub. 4198	1 22 60	4 3/23	3 10394 250 60	-	1

Suspension		Patient	Ground	Communication	Equipment	Neutral	Contract Point	Date of use	Remarks
Insulator	Isolated	wire				Kind	Chm or KVA		Standard Arrangement of Distribution & Grounding.
Serial Number	Total Number	Length (Km)	No. of Circuits	Telephone Lines	Kind	Switch Stations	Location		
Number of Insulators			No. of Cords	Length (Km)	Kind	Switch Stations	Location		
Number of Suspensions			Circuit Lines	No. of Cords	Kind	Switch Stations	Location		
1	3	100	100	16081	4.0	Add	Locality	Sept 1939	1
2	3	42	42	1884	4.0	"	"	Oct 1942	1
2	3	12	12	1323	4.0	"	"	Oct 1942	1
2	3	28	28	2243	4.0	"	"	Dec 1939	1.2
3	168	"	"	2941	4.0	"	"	Dec 1942	1.2
2	3	1250	4	23225	4.0	"	"	Sept 1939	1.2
2	3	242	242	5580	4.0	"	"	June 1939	1.2
3	4	663	"	1251	4.0	"	"	July 1939	1.2
2	3	186	"	984	H	"	"	Aug 1939	1.2
3	4	3828	477	2236m	4.0	Add	"	Dec 1939	1.2
3	3	465	"	10584	4.0	"	"	Dec 1939	1.2
2	3	734	424	11663	4.0	"	"	May 1939	1.2
2	3	763	"	18064	4.0	"	"	Dec 1942	1.2
2	3	264	"	18456	4.0	"	"	Aug 1943	1.2
2	3	324	"	14958	4.0	"	"	July 1944	1.2
2	3	1004	-						

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Branch Line	Location	Length	Type	Supporting Poles		Total Cost
				Distance between poles	No. of poles	
Hami - North Changgyong East	Kilch' Sub 29/13	1 22 60	Electric Wire	26.3	3 88.29 270	60 947
Bukdo	" " " Kich' Sub 18/53	1 22 60	"	5.0	3 555.09 450	60 292
" " " Pakson Kilch' Paper Mill	Sub 19/26	1 22 60	"	26.3	3 579.98 450	60 18
" " " Kich' Kilch' Sub 9/32	" " " Kich' Sub	1 22 60	"	26.3	3 297.96 150	60 150
Sōjōng Sōngjin	Sōjōng Sub 6/208	1 22 60	"	26.3	3 186.21 280	60 103
Tanchon Branch (Hamdoek)						2123
Total	10/1081					4508
Tanchon Branch Total	28/1699					6
Hami - North Pugō Kwaryue East	Pugō Sub 0/30	1 22 60	Electric Wire	5.0	3 6730 50	50 402
Bukdo	Koanthae Chōgjin Sub 50/90	1 22 60	"	26.3	3 152.40 298	100 169
Tomakting Pugō Sub 2	Sub 7/1	1 22 60	Steel cable	26.3	3 385.125	50 20
Jinjin Sung Sub 2/3	Jinjin Sub 1 Sub 2/3	2 22 60	Electric Wire	26.3	6 197.200	50 85
Pansie Chengjin Sub 4/9	Chengjin Sub 4/9	2 22 60	Electric Wire	26.3	6 290.164	50 69
Yanghyon Odaejin Sub 4/1	Odaejin Sub 4/1	1 22 60	"	26.3	3 128.583	50 156
Chunhan Yōngju Sub 14/7	Yōngju Sub 14/7	1 22 60	"	26.3	3 442.240	600 679
Ödæjin Chönl Ödæjin	Ödæjin Chönl	1 22 60	"	26.3	3 128.335	70 137 29
Nanam Chönl Nānām	Chönl 20/1	1 22 60	"	5.0	3 60.220	100 139 5 353
Tengkai Tengkai	5/1	2 22 60	"	26.3	6 308.338	150 139 28
Chungdo Yōngju Chungdo	Yōngju 4/32	1 22 60	"	26.3	3 42.986	55 259
Wiring	Wiring					
Branches	Branches					

Suspension	Atticod	Ground	Wire	Security Communication equipment	Neutral Contact Point	Kind	Ohm or KVA	Remarks
Insulator	Insulated			Telephone lines	Location			standard arrangement electric wire gauge
2 3 1376	41	dark		2923 Jsm 4.0	Add			249
2 3 324				1853 "	4.0			Oct 1943 1.2
2 3 116	" 12	Hi dark		1926 "	4.0			June 1943 1.2
2 3 156	" 22	Hi dark		1926 "	4.0			June 1943 1.2
2 3 156	" 22	Hi dark		6208 "	4.0			March 1943 1.2
2 2 10	Osaka			0.310 "	4.0	Add		left 1943 0.93
	Porcelain			53505 "	4.0	Pendant		Jan 1936 2.6
2 2 200	Gaper Japan			9.1 "	4.0	Add		1.5
	Insulator			3.3 Cuffed	4.0	"		1.5
3 20	" 120	"		5.0 "	4.0	"		1.5
	760 "			4.3 "	4.0	"		1.5
220 "				19.7 "	4.0	Add		1.5
2 3 882	+ 328	-	-	34.5 "	4.0	"		2.3
2 3 350	+ 2650	-	-	183 "	4.0	Add		2.3
2 3 50	+ 1300	-	-	183 "	4.0	Add		2.3
2 3 250	Osaka	7631	1	4.0	4.0	"		
	Porcelain							
2 3 168	Gaper			14.332 "	4.0			Aug 1949 1
	Insulator							
	408							

Section	Name of Transmutation line Name of County Bureau Provinces	Length (K.m)	Electric wire per set	Frequencies Max Voltage Number of Cords	Kind	Distance between poles (m)	Supporting Poles		Total
							Wooden	Iron	
Hangyong North Hei Bukdo East	Yongyu Sub 7006 Hwanggong Sub 56	1 22	60 Copper 2.5	3 2008 210 50	-	-	52	134	250
" " Tongchong gold & silver 1928 Tongyang 1928	1 22	60 "	5.0 3	3 2077 210 50	-	-	3	-	-
" " Seonam 1969 Seonam 59	1 22	60 "	5.0 3	3 2077 59 50	-	-	-	-	193
" " San'gyo-Hangyong San'gyo-Hangyong 1925	1 22	60 "	5.0 3	3 2075 195 50	-	-	-	-	333
" " Chok-Bojib Chok-Bojib 2000	1 22	60 "	5.0 3	3 600 120 50	-	-	2	-	270
Chongjin Branch Total 211.59							62	-	13465
Tongchae Distinctive Division Grand Total 83383							18	-	5024
Hangyong Bukdo Total 30.77							66	-	-
Hangyong Hantan Hwang Ipa Sub Namdo gung 24324	1 22	60 Copper 2.5	3 39.02	50	-	-	-	-	469
Hangyong Hando 150214							6	-	7148
11 KV									
P'yongan North Yung Senggyo Nambu West Ri Yusangri Sub. 17	1 11	60 Copper 2.5	3 51.700	50	-	-	4	-	-
Kang North won East	Sandaei Sub. Wonsan 989 Sub.	1 35	60 Copper 5	3 29688 110 45	-	-	-	-	215
35 KV									
Kang North won East	Sandaei Sub. Wonsan 989 Sub.	1 35	60 Copper 5	3 29688 110 45	-	-	-	-	215

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**Supply of Electricity**

**20 November 1950**

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor or Indoor	Cooling Method	Phase	Frequency	Number in Common use	Spare	Maker	Remarks
Pukchung Machine	45300	22650	66	2.3		△-△	Outdoor	Self cooling	3	60	2	1	Shibaura	Machine
"	48600	24300	"	"		"	"	"	3	"	2	1	"	"
"	10000	1000	"	3.3		"	"	"	3	"	1		Meiden	"
Ch'ongsu	51000	28000	"	0.15		"	"	"	3	"	2		Fuji	Chemistry
"	10000	5000	"	3.3		"	"	"	1	"	2		Shibaura	"
"	1500	500	22	"		"	"	"	1	"	3		Hidachi	"
Sünghori	6000	2000	66	44	22	"	"	"	1	"	3	1	Fiji	
Sünghori	600	200	22	3.3		"	"	"	1	"	3		Shibaura	
"	300	100	22	3.3		"	"	"	1	"	3		Hidachi	
Kunjari	1050	350	66	3.3		"	"	"	1	"	3	1	"	
Söngch'on	1050	350	"	22	3.3	"	"	"	1	"	3	1	Shibaura	
Inpy'ong	1500	500	"	"	"	△-△	"	"	1	"	3	1	"	
"	600	200	22	3.3		△-△	"	"	1	60	3		Hidachi	
Hüngny'ong	1500	500	66	3.3		"	"	"	1	"	3		Hidachi	
Sunan	1800	600	"	"		"	"	"	1	"	3	1	"	
Sinch'on	600	200	22	"		"	"	"	1	"	3	1	Shibaura	
Sukch'on	450	1500	66	22		"	"	"	1	"	2		Hidachi	
"	1270	700	"	3.3		V-V	"	"	1	"	6		Shibaura	
"	1200	200	22	3.3		△-△	"	"	1	"			"	
Sinanju	3000	1000	66	22		△-△	"	"	1	"	3	1	Nishijima	
"	2700	300	22	3.3		"	"	"	1	"	9	1	Shibaura	
Kaech'on	6000	2000	66	22		"	"	"	1	"	3	1	"	
"	700	300	22	3.3		"	"	"	1	"	3	1	"	
"	700	50	"	"		"	"	"	1	"	3		"	
Sunch'on	2250	750	66	22		"	"	"	1	"	3		"	
"	900	300	22	3.3		△-△	"	"	1	60	3		Osaka	
"	450	150	"	"		"	"	"	1	60	3		Hidachi	
"	860	500	66	22		"	"	"	1	"	2		Shibaura	
"	150	50	22	3.3		"	"	"	1	"	3		Osaka	
Tökch'on	450	150	66	3.3		"	"	"	1	"	3		Hidachi	
Chunghwa	600	200	22	3.3		"	"	"	1	"	3		Shibaura	
Tonghwa	900	300	22	"		"	"	"	1	"	3		Osaka	

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor	Cooling Method	Phase	Frequency	Common use	Spare	Maker	Remarks
Ch'ongnyong	450	150	22	3.3		△-△	Outdoor	Self cooling	1	60	3	1	Osaka	
Mirim	300	100	22	3.3		"	"	"	1	"	3	1	Fuji	
Yöngyu	1200	200	"	"	"	"	"	"	1	"	6	1	"	
Namyang	900	300	"	"	"	"	"	"	1	"	3	1	Nishijima	
"	300	100	"	"	"	"	"	"	1	"	3	1	Hidachi	
Chas'ng	2100	700	66	22	3.3	"	"	"	1	"	3	1	Nishijima	
Pongch'on	450	150	22	3.3		△-△	Outdoor	"	1	"	3	1	"	
Yongdam	600	200	"	"	"	"	"	"	1	"	3	1	Shibaura	
Hallyöng	450	150	"	"	"	"	"	"	1	"	3	1	"	
"	300	100	"	"	"	"	"	"	1	"	6	1	"	
Sinch'ang	1800	300	"	"	"	"	"	"	1	"	2	1	"	
Taepyöng	866	500	66	22		V-V	"	"	1	"	1	1	"	
"		750	"	"		"	"	"	1	"	3	1	"	
"	150	50	22	3.3		△-△	"	"	1	"	3	1	"	
Pukchin	2250	750	66	22	3.3	"	"	"	1	60	3	1	"	
Samgö	1500	500	"	22		"	"	"	1	"	3	1	"	
"	600	200	22	3.3		"	"	"	1	"	6	1	"	
Pakch'on	1200	200	22	"		△-△	"	"	1	"	3	1	Shibaura	
Yongdëng	600	200	22	"		△-△	"	"	1	"	3	1	Hidachi	
Myohyangsan	300	100	"	"	"	"	"	"	1	"	3	1	Osaka	
"		60	"	"	"	"	"	"	1	"	3	1	Shibaura	
Songpyöng	600	200	"	"	"	"	"	"	1	"	2	1	"	
Parwön	2250	750	66	22		V-V	"	"	1	"	3	1	Nishijima	
"	300	100	22	3.3		△-△	"	"	1	"	3	1	Hidachi	
Maengchungni	3000	1000	66	22	3.3	"	"	"	1	"	3	1	"	
"	600	200	22	3.3		"	"	"	1	"	3	1	Shibaura	
Yöngmi	100	300	22	3.3		"	"	"	1	"	3	1	"	
Ünsan	100	200	"	"	"	"	"	"	1	"	6	1	"	
Wölli	600	100	"	"	"	"	"	"	1	"	3	1	Shibaura	
Toksan	600	300	22	3.3		"	"	"	1	60	3	1	Germany	Cement
Mandal	3750	1895	44	"	"	"	Indoor Water cool- ing	"	1	60	2	1	"	

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor or Indoor	Cooling Method	Phase	Frequency	Number Common use	Spare	Marker	Remarks
Mandal	600	100	44	3.3		△-△	Outdoor	Self cooling	1	60	6			Cement
"	300	66	"	"	"	"	"	"	1	"	3	1	Nishijima	"
Kangdong	750	250	44	"	"	"	"	"	1	"	3	1	Hidachi	Coal Mine
"	150	50	"	"	"	"	"	"	1	"	3	4		"
"	75	"	"	"	"	"	"	"	1	"	3			"
"	100	"	"	"	"	"	"	"	1	"	6			"
"	50	"	"	"	"	"	"	"	1	"	3			"
Singho Cement	3600	1200	66	"	"	"	"	"	1	"	3	1		"
Taksan	1500	500	"	"	"	"	"	"	1	"	3		Hidachi	"
Hamhung	4500	1500	"	"	"	"	"	"	1	"	3	3		Mine
Kongpb	516	300	"	"	"	V-V	"	"	1	"	3	1		Cableway
Suan	3000	1000	"	"	"	△-△	"	"	1	"	3	3	Hidachi	Gold Mine
Holtong	1200	400	"	"	"	"	"	"	1	"	3	1	"	"
Sunchon Chemistry	17300	6000	"	"	"	V-V	"	"	1	"	4		Takaoka	Chemistry
"	6000	600	"	"	"	△-△	"	"	3	"	1			"
"	1500	500	"	"	"	"	"	"	1	"	3		Fuji	"
Tokchon Coal Mine	1500	500	"	"	"	"	"	"	1	"	3	1	Hidachi	Coal Mine
Taeuyudong	2250	750	"	22	3.3	"	"	"	1	"	3	4		Mine
Taesong	600	200	22	3.3	"	"	"	"	1	"	3		Fuji	"
Changnim	1200	200	"	"	"	"	"	q	1	"	6	1	Hidachi	"
Anju Coal Mine	4500	1500	66	"	"	"	"	"	1	"	3	1		Coal Mine
"	900	300	22	3.3	"	"	"	"	1	"	3	1	"	"
Unhung	600	200	"	"	"	"	"	"	1	"	3		Shibaura	Pumping
Chondong	600	300	"	"	"	"	"	"	1	60	3		Osaka	Mine
Kumsong	600	300	"	"	"	"	"	"	1	"	3			Irrigation
Yongwon	400	900	"	"	"	"	"	"	1	"	3		Shibaura	Iron Mine
Yongmun	950	150	"	"	"	"	"	"	1	"	3	1	"	Mine
Unsan Mine (Pukchin)	2250	750	66	22	3.3	"	"	"	1	"	3	1		"
"	300	22	3.3	"	"	"	"	"	1	"	8			"
Unsan Mine (Choll)	750	250	"	"	"	"	"	"	1	"	3			"
Unsan Mine (Sambong)	260	650	"	"	"	"	"	"	1	"	2			"

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor	Indoor	Cooling Method	Phase	Frequency	Number Common use	Spare	Maker	Remarks
Unsan Mine (Kumsuryöng)	450	150	22	3.3		A-A	Outdoor	Indoor	Self cooling	1	60	3			Mine
Unsan Mine (Yichon)	300	100	"	"		"	"	"	"	1	"	3			"
Unsan Mine (Wönt'am)	1500	50	11	"		"	"	"	"	1	"	3			Coal
"	75	"	"			"	"	"	"	1	"	3			"
"	100	"	"			"	"	"	"	1	"	2	3		"
Namdong (No.1)	4500	1500	66	22	3.3	"	"	"	"	1	"	3	1	Hidachi	
"	1500	500	"	"		"	"	"	"	1	"	3	1	Shibaura	
Namdong (No.2)	4500	1500	"	"	3.3	"	"	"	"	1	"	3	1	Osaka	
"	3000	1000	"	"	3.3	"	"	"	"	1	"	3	1	Hidachi	
Torori	3000	1000	"	"		"	"	"	"	1	"	3	1	Fuji	
Taepyöng	500	300	22	"		"	"	"	"	1	"	3		Shibaura	
Kangson	500	300	"	"		"	"	"	"	1	"	3		Fuji	
Wöñüp	520	150	"	"		V-V	"	"	"	1	"	4		Shibaura	
"						V-V	"	"	"					Mitsubishi	
Udungni	300	100	"	"		A-A	"	"	"	1	"	3		Hidachi	
Machamni	87	50	"	"		V-V	"	"	"	1	"	2			"
Machamni	87	50	"	"		"	"	"	"	1	"	2		Osaka	
Machamni	450	150	"	"		A-A	"	"	"	1	"	3		Hidachi	
Chönggori	300	100	22	3.3		"	"	"	"	1	"	3		Shibaura	
Pungchöng	600	200	"	"		"	"	"	"	1	"	3			"
Mundong	173	100	"	"		V-V	"	"	"	1	"	2			"
Chinjidong	1500	600	66	3.3		A-A	"	"	"	1	"	3		Hidachi	
Kangson Steel Mill	15000	6000	"	11		"	"	"	"	1	"	3		Mitsubishi	Steel
"	15000	5000	11	"		"	"	"	"	1	"	3			"
Kiyang Water for industry	600	200	22	"		"	"	"	"	1	"	3		Fuji	
Taepo	750	250	11	3.3		"	"	"	"	1	"	3	1	Shibaura	Coal Mine
Nampo Zinc Refinery	10500	3500	"	"		"	"	"	"	1	"	3	1	Hidachi	Refinery
Nampo Chemistry	1500	500	"	"		"	"	"	"	1	"	3			Chemistry
Nampo Light Metal (No.1)	25000	12500	66	11		"	"	"	"	3	"	2	2	Meiden	Light Metal
(No.2)		12000	4000	"	3.3	"	"	"	"	1	"	3		Fuji	"

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor or Indoor	Cooling Method	Phase	Frequency	Number Common use	Spare	Maker	Remarks
Kiyang Chemistry	10000	10000	66	11	"	△-△	Outdoor	Self Cooling	3	60	1	Fuji	Chemistry	
"	1500	500	"	22	"	"	"	"	1	"	3	Shibaura	"	
"	600	200	22	3.3	"	"	"	"	1	"	3	"	"	
Taealli	5070	5000	66	11	"	V-V	"	"	1	"	2	Shibaura		
"	2000	"	3.3	"	"	△-△	"	"	1	"	4	"	"	
"	3000	1000	11	"	"	"	"	"	1	"	3	1	"	
Kanggye	4500	1500	66	"	"	"	"	"	1	"	3	Osaka		
"	500	"	"	"	"	"	"	"	1	"	4	Shibaura		
Munam	2250	750	"	"	"	"	"	"	1	"	3	Meiden		
Pyeolha	172	100	"	"	"	V-V	"	"	1	"	100x1 50x2	Hidachi		
Manpb	1300	750	"	"	"	"	"	"	1	"	2	"	"	
Unbong	566	500	"	"	"	"	"	"	1	"	2	"	"	
Sijung	86	50	"	"	"	△-△	"	"	1	"	2	Osaka		
Unsong	2250	750	66	22	"	V-△	"	"	1	"	3	1	Shibaura	
"	300	100	22	3.3	"	△-△	"	"	1	"	3	"	"	
Ansil	1300	750	66	"	"	V-V	"	"	1	"	2	"	"	
Chungam	600	200	22	"	"	△-△	"	"	1	"	3	1	Hidachi	
Koin	300	100	"	"	"	"	"	"	1	"	3	Shibaura		
"	50	"	"	"	"	"	"	"	1	"	4	Hidachi		
Manari	1500	500	66	3.3	"	"	"	"	1	"	3	"	"	
Koam	1500	500	"	"	"	Y-△	"	"	2	"	3	"	"	
Sinw&n	1500	500	66	22	"	△-△	"	"	1	"	3	"	"	
Pangdanmy&ng	1200	200	22	3.3	"	"	"	"	1	"	6	"	"	
Tongam	2250	750	66	"	"	"	"	"	1	"	3	1	Shibaura	
Chungha	1500	500	"	22	"	"	"	"	1	"	3	1	"	
"	173	100	22	3.3	"	V-V	"	"	1	"	2	"	"	
Tonghadong	1500	750	11	33	"	"	"	"	1	"	3	Hidachi		
"	1300	500	66	33	"	△-△	"	"	"	"	"			
Chobsan	225	75	22	3.3	"	"	"	"	1	"	6	Osaka		
Tongnogang	173	100	11	"	"	V-V	"	"	1	"	2			
Unsib	300	100	22	"	"	△-△	"	"	1	"	3	Hidachi		
Haeju	3600	1200	66	22	3.3	Y-△	"	"	1	"	3	1	"	

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor or Indoor	Cooling Method	Number Phase	Common Frequency	Number Connec-	Spare	Maker	Remarks
Songnim	200	50150	66	3.3		V-V	Outdoor	Self Cooling	1	60	2		Shibaura	
"	300	100	"	"			"	"	1	"	3		Osaka	
Sariwon	2250	750	"	22		"	"	"	1	"	2		Shibaura	
"	3100	700	"	3.3		"	"	"	1	"	3		Hidachi	
"	2580	1500	"	"		V-V	"	"	1	"	2			
Namchon	2250	750	"	22	3.3	△-△	"	"	1	"	3	1	"	
Chaeryong	3460	1000	"	"		V-V	"	"	1	1	4		Shibaura	
"	2250	750	"	"			"	"	1	60	3	1	Fuji	
"	900	300	20	3.3		"	"	"	1	"	3		Shibaura	
Kyejung	4500	1500	66	22		X-X	"	"	1	"	3	1	Hidachi	
"	173	100	22	3.3		V-V	"	"	1	"	2	1	"	
Simchon	300	100	"	"		△-△	"	"	1	"	3	2	Shibaura	
Hukkyo	300	100	"	"		"	"	"	1	"	3		Hidachi	
Anak	900	300	"	"		"	"	"	1	"	3		Shibaura	
Hwangju	900	300	"	"		"	"	"	1	"	3		Fuji	
Sinhwando	516	150	"	"		V-V	"	"	1	"	4		Mitsubishi	
Matari	1200	200	"	"		△-△	"	"	1	"	6	1	Shibaura	
Samchon	86	50	"	"		V-V	"	"	1	"	3		Hidachi	
Supung Power Plant	400000	100000	156	225		△-Y	"	Water Cooling	3	50 60	4	1	Shibaura	
Supung	180000	10000	"	66		"	"	"	3	60	3		"	
"	6000	1500	"	3.3		△-△	Indoor	Self Cooling	1	"	3	1	"	
"	3100	100	"	"		"	"	"	1	"	3	1	"	
"	3600	600	3.3	22		"	"	"	3	"	4	2	"	
Hoch'on-gang (No. 1)	160000	80000	10	270		△-Y	Outdoor	Water Cooling	3	"	2		"	Power Plant
" (No. 2)	80000	40000	"	"		"	"	"	3	"	2		"	
" (No. 3)	40000	40000	"	100		"	"	"	3	"	1	"2	"	
" (No. 3)	74000	37000	"	"		"	"	"	3	"	2		"	
" (No. 4)	80000	40000	"	110		"	"	"	3	"	2		"	
" (No. 4)	7000	3000	"	66		"	"	Self Cooling	3	"	3		Hidachi	"

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor or Indoor	Cooling Method	Phase	Frequency	Common use	Spare	Maker	Number	Remarks
Puch'ŏn-gang (No.1)	144000	36000	11	110	"	△-Y	Outdoor	Water Cooling	3	60	4	1	Shibaura	Power Plant	
" (No. 2)	46000	23000	"	"	"	"	"	"	3	"	2	1	Fuji	"	
" (No. 3)	26664	26640	"	66	"	"	"	Self Cooling	3	"	4	"	"	"	
" (No. 4)	12999	4333	"	110	"	"	"	Water Cooling	1	"	3	1	Shibaura	"	
Yonghung-gang Power Plant	750	250	3.3	22	"	△-△	"	Self Cooling	1	"	30	1	"	"	
Changjin-gang (No. 1)	160000	40000	11	110	"	△-Y	"	"	3	"	4	1	"	"	
" (No. 2)	240000	60000	11	154	"	"	"	Outdoor Cooling	3	"	4	"	"	"	
" (No. 3)	46500	15500	11	110	"	"	"	"	3	"	3	"	"	"	
" (No. 4)	54000	18000	11	110	"	"	"	"	3	"	4	"	"	"	
" (No. 4)	9000	8000	66	154	"	"	"	"	"	"	3	1	"	"	
" (No. 2)	136000	45000	11	110	"	"	"	"	3	"	3	"	"	"	
Hwach'ŏn	60000	30000	10	154	16	△-Y-△	"	Self Cooling	3	"	2	"	Hidachi	"	
Chungdaeri (No. 1)	4125	1375	66	66	"	△-	"	"	1	"	3	"	Shibaura	"	
" (No. 2)	4800	1600	66	66	"	"	"	"	1	"	3	1	Hidachi	"	
Haengch'elli	4125	1375	"	"	"	"	"	"	1	"	3	1	Shibaura	"	
Sinilli	3300	1100	"	"	"	"	"	"	1	"	3	1	Hidachi	"	
Songmok	600	200	22	3.3	"	"	"	"	1	"	3	1	Osaka	"	
Talch'ŏn	86	50	"	"	"	V-V	"	"	1	"	2	1	Hidachi	"	
Sugyo	173	100	"	"	"	"	"	"	1	"	2	1	"	"	
Sinch'ŏn	1200	400	"	"	"	△-△	"	"	1	"	3	"	Fuji	"	
"	3460	2000	"	"	"	V-V	"	"	1	"	2	"	Mitsubishi	"	
Wandong	600	200	"	"	"	△-△	"	"	1	"	3	1	Osaka	"	
Suktal	300	100	"	"	"	"	"	"	1	"	3	"	Hidachi	"	
Sinmak	600	200	"	"	"	"	2	"	1	"	3	"	Osaka	"	
Soh'nung	600	200	"	"	"	"	"	"	1	"	3	"	Shibaura	"	
Singye	173	100	"	"	"	V-V	"	"	1	"	2	"	Nishijima Shibaura	"	
Pangyo	300	100	"	"	"	△-△	"	"	1	"	3	"	Shibaura	"	
Chisokk	300	100	"	"	"	"	"	"	1	"	3	"	Osaka	"	
P'opch'ŏn	300	100	"	"	"	"	"	"	1	"	3	"	Nishijima	"	

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor or Indoor	Cooling Method	Number	Common use	Spare	Maker	Remarks	
Kumgyo	300	100	22	3.3	"	△-△	Outdoor	Self Cooling	1	60	3	Hidachi		
Hanpo	86	50	"	"	"	V-V	"	"	1	"	2	"		
Pyongsan	50	50	"	"	"	-	"	"	1	"	1	"		
Mulgae	30	30	"	"	"	-	"	"	1	"	1	Osaka		
Chongsu	52	30	"	"	"	V-V	"	"	1	"	2	Hidachi		
Unbong	50	50	"	"	"	-	"	"	1	"	1	"		
Yohyok	688	200	"	"	"	V-V	"	"	1	"	2	"	Mine	
Yultong	860	500	"	"	"	"	"	"	1	"	2	Shibaura	"	
Yongdangpo	6000	1000	66	3.3	"	△-△	"	"	1	"	6	Hidachi	Cement	
Haeju Refinery	1290	750	"	"	"	V-V	"	"	1	"	2	1	Osaka	
Madong Cement	3000	100	"	"	"	△-△	"	"	1	"	3	Shibaura	"	
Sariwon Coal Mine	1500	500	"	"	"	"	"	"	1	"	3	1	Hidachi	Coal
Kijong	150	50	22	"	"	"	"	"	1	"	3	Mitsubishi	Mine	
Nagyok	600	200	"	"	"	"	"	"	1	"	3	1	Hidachi	"
Hwanghae Refinery	12000	4000	66	"	"	"	"	"	1	"	3	1	Shibaura	Refinery
Sindok Mine	1500	500	"	"	"	"	"	"	1	"	3	"	Mine	
Ulyul	600	200	22	"	"	"	"	"	1	"	3	"		
Tongch'angpo	600	100	"	"	"	"	"	"	1	"	6	Shibaura	Nishijima	
Pyongyang	4500	1500	154	66	11	Y-Y	"	Water Cooling	1	"	3	1	Shibaura	
"	4500	1500	"	"	"	"	"	Self Cooling	1	"	3	"		
"	2100	700	66	3.3	"	△-△	"	"	21	"	3	1	"	
"	1500	500	22	"	"	"	"	"	1	"	3	1	"	
Choch'on	20000	100000	220	66	"	Y-Y	"	Wind Cooling	3	"	2	"		
"	2250	750	66	22	"	△-△	"	Self Cooling	1	"	3	1	"	
"	866	500	"	3.3	"	V-V	"	"	1	"	2	"		
Unsan	30000	15000	154	66	"	Y-Y	"	"	3	"	2			
"	1200	400	66	3.3	"	△-△	"	"	1	"	3	1	"	
Namp'o	10000	10000	220	66	"	Y-Y	"	Wind Cooling	3	"	1	"		
"	412	250	66	33	"	V-V	"	Self Cooling	2	"	2	2	Osaka	

Name of Substations	Output KVA	Capacity KVA	Voltage	1st	2nd	3rd	Connecting Method	Outdoor	Indoor	Cooling Method	Phase	Frequency	Number Common use	Spare	Maker	Remarks
Tasati	200000	100000	220	66			Y-Y			Wind Cooling	3	60	1	1	Shibaura	
Kwanpyöng	4000	4000	66	22				"		Self Cooling	1	"	1	1	Shibaura	
Soktang Spa	4000	4000	"	"			"	"		"	1	"	1		Hidachi	
Haeso	346	200	22	3.3			V-V	"		"	1	"	2			
"	450	150	"	"				"		"	1	"	3	1		
Chöngsan	600	200	"	"			"	"		"	1	"	3			
Yönhö	432	250	"	"			V-V	"		"	1	"	2			
"	341	200	"	"			"	"		"	1	"	2			
Chölsan	600	200	"	"				"		"	1	"	3			
Pugdum	300	100	"	"			"	"		"	1	"	3			
Paengnyang	900	300	66	22			V-V	"		"	1	"	2	1		
Pungnyul	512	300	"	"			"	"		"	1	"	2	1		
Chungsan	300	100	"	"				"		"	1	"	3			
Söchön	520	300	"	"			V-V	"		"	1	"	2			
Kalma (No.2)	5000	2500	"	"				"		"	3	"	2		Hidachi	
"	500	500	22	3.3			"	"		"	"	"	1		Osaka	
Taegang	150	50	66	"			"	"		"	1	"	3		"	
Ullim	600	200	22	"			"	"		"	1	"	3		Hidachi	
Munpyöng	150	50	"	"			"	"		"	1	"	3		Hidachi	
Munpyöng Refinery	1500	250	"	"			"	"		"	1	"	6		Hidachi	Refinery
Munpyöng Light Metal	1800	600	"	"			"	"		"	1	"	3	1	Fuji	Light Metal
Sangdong	3500	1000	"	"			V-V	"		"	1	"	4		Shibaura	
Kalma	3000	1000	"	"				"		"	"	"	3		Hidachi	
Süsöngni	600	200	"	"			"	"		"	1	"	3		Shibaura	
Paebla	100	200	"	"			"	"		"	1	"	3		Hidachi	
Iryöng	1500	500	22	3.3			"	"		"	1	"	3		"	
"	4500	1500	66	22			"	"		"	1	"	3	1	Shibaura	
"	2700	300	22	3.3			"	"		"	1	"	9	1	Hidachi	
Hüngnam	100000	50000	110	11			Y-Δ	Water	Water	Cooling	1	"	6	1	Shibaura	Chemical factory

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor or Indoor	Cooling Method	Number Phase	Common Frequency	Use	Spare	Number Maker	Remarks
Pongung	102000	34000	110	11	"	Y-△	Outdoor	Water Cooling	3	60	4	"	Shibaura	Chemical Factory
"	20000	20000	"	66	"	"	"	"	3	"	1	"	"	"
"	5000	5000	"	"	"	"	"	"	"	"	1	"	"	"
Hungnam	160000	50000	220	11	"	"	"	"	"	"	2	"	"	"
Hagal	900	300	66	3.3	"	"	"	Self cooling	1	"	3	"	"	"
Chiktong	1200	200	"	"	"	"	"	"	"	"	6	"	Mitsubishi	
Changjin-gang (No. 4)	9000	3000	110	34.7	"	Y-△	"	Water Cooling	1	"	3	"	W.H.	
Pungsan	900	300	22	3.3	"	"	Indoor	Self Cooling	1	"	3	"	Mitsubishi	
Chonbulsan	150	50	22	3.3	"	"	Outdoor	"	1	"	3	"	Osaka	
Puchöngang (No. 4)	300	100	11	"	"	"	"	"	1	"	3	"	"	"
Taejo	150	50	22	"	"	"	"	"	1	"	3	"	"	"
Unbong	2580	2500	66	22	"	"	"	"	3	"	1	"	Hidachi	
"	600	200	22	3.3	"	"	"	"	1	"	3	"	"	"
Inhung	3000	1000	66	22	"	"	"	Z	1	"	3	"	Shibaura	
"	600	200	22	3.3	"	"	"	"	1	"	3	"	"	"
"	150	50	"	"	"	"	"	"	"	"	3	"	"	"
Wansang	100	200	"	"	"	"	"	"	"	"	3	"	Hidachi	
Munsan	129	75	"	"	"	V-V	"	"	"	"	2	"	Meiden	
Wönpö	172	100	"	"	"	"	"	Z	"	"	2	"	Hidachi	
Chinpyöng	600	200	"	"	"	"	"	"	"	"	3	"	Shibaura	
Yönghung	1050	350	"	"	"	"	"	"	"	"	3	"	Hidachi	
Yongban	100	50	"	"	"	"	"	"	3	"	2	"	Osaka	
Yönghung Gold Mine	36	50	"	"	"	V-V	"	"	1	"	2	"	Nishijima	
Sanggyöngtun	300	100	22	3.3	"	△-△	"	"	1	"	3	"	Hidachi	
Kowön Coal Mine (No. 1)	900	300	"	"	"	"	"	"	1	"	3	"	Osaka	Coal Mine
"(No. 2)	900	300	"	"	"	"	"	"	1	"	3	"	"	"
Sangok	750	250	"	"	"	"	"	"	1	"	3	"	"	"
Kowön	520	300	"	"	"	V-V	"	"	1	"	2	"	Hidachi	
Wönsan	8660	2500	66	22	"	"	"	"	"	"	4	"	Shibaura	
2 "	3600	1000	22	3.3	"	△-△	"	"	"	"	3	"	Hidachi	

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor	Indoor	Cooling Method	Number of Phase	Frequency	Common use	Spare	Maker	Remarks
Parwiri	600	200	22	3.3		△-△		Outdoor	Self Cooling	1	60	3		Hidachi	
Sinpung Coal Mine	900	300	"	"		"	"	"	"	1	"	3		"	Coal Mine
Munch'ın Coal Mine	100	200	"	"		"	"	"	"	1	"	3		Shibaura	"
Munch'ın	300	100	"	"		"	"	"	"	1	"	3		Hidachi	
Puks'ng	600	200	"	"		"	"	"	"	1	"	3		"	"
Ch'öngnaeri	9000	1500	66	22	3.3	"	"	"	"	1	"	6		Hidachi	
Chinh'ing	900	300	22	3.3		"	"	"	"	"	"	3		Hidachi	
Sögwangsa	600	200	"	"		"	"	"	"	1	"	3	1	"	Hidachi
Hamhung (No. 1)	6000	6000	66	"		Y-△		"	"	3	"	1		Mitsubishi	
"	1730	6000	"	22		V-V		"	"	1	"	2		Shibaura	
" (No. 2)	4500	1500	"	3.3		△-△		"	"	1	"	3		Hidachi	
"	2250	750	"	"		"	"	"	"	1	"	3		Meiden	
Samho	90	30	22	3.3		"	"	"	"	1	"	3		Osaka	
Hongwön	2100	1500	11	22		V-V		"	"	1	"	2		Hidachi	
"	600	200	22	3.3		△-△	Z	"	"	1	"	3		Shibaura	
Unpb	600	200	"	"		"	"	"	"	1	"	3		Mitsubishi	
Samch'a	520	300	"	"		V-V		"	"	1	"	2		Shibaura	
Yönpb	600	200	"	"		△-△		"	"	1	"	3		Osaka	
Ch'öngpy'öng	900	300	"	"		"	"	"	"	1	"	3		Mitsubishi	
Söndök	600	200	"	"		"	"	"	"	1	"	3		Meiden	
"	450	150	"	"		"	"	"	"	1	"	3		Osaka	
Pupy'öng	35	50	Z	"		V-V		"	"	1	"	2		Shibaura	
Sinsang	300	100	22	3.3		△-△		"	"	1	"	3		Osaka	
Sokku	600	200	"	"		"	"	"	"	1	"	3		Shibaura	
Yanghwa	344	200	"	"		V-V		"	"	1	"	2		Hidachi	
Sinpb	692	400	"	"		"	Indoor	"	"	"	"	2	1	Fiji	
Töks'ng	344	200	"	"		"	Outdoor	"	"	"	"	2		Hidachi	
Nah'ng	3000	1000	66	22		△-△		"	"	3	"	3			
"	1730	1000	22	3.3		"	"	"	"	3	"	2			
" (No. 2)	4500	1500	66	"		"	"	"	"	1	"	3		Shibaura	

Name of Substations	Output KVA	Capacity KVA	Voltage	1st	2nd	3rd	Connecting Method	Outdoor	Indoor	Cooling Method	Phase	Frequency	Number Common Use	Number Spare	Maker	Remarks
Sinpukch'ong	450	150	22	3.3	"	"	Outdoor	Self Cooling	"	1	60	3	"	Hidachi		
"	300	100	"	"	"	"	"	"	"	1	"	3	"	Hidachi		
Pukch'ong	700	300	"	"	"	"	"	"	"	1	"	3	"	Shibaura		
"	200	200	"	"	"	"	"	"	"	1	"	1	"	Hidachi		
Ilg'ön	1732	1000	66	22	V-V	"	"	"	"	1	"	2	"	Shibaura		
"	900	300	22	3.3	"	"	"	"	"	"	"	3	"	Hidachi		
Hyesan	1200	200	22	"	"	"	"	"	"	1	"	6	"	Shibaura		
Iw'an Iron Mine	600	200	"	"	"	"	"	"	"	1	"	3	"	Hidachi		
"	900	300	"	"	"	"	"	"	"	1	"	3	"	"		
Talch'ön	900	300	66	"	"	"	"	"	"	1	"	3	"	"		
Puktu	900	300	22	"	"	"	"	"	"	1	"	3	"	"		
Pudong	600	200	"	"	"	"	"	"	"	1	"	3	"	Shibaura		
"	900	300	"	"	"	"	"	"	"	1	"	3	"	"		
"	150	90	"	"	"	"	"	"	"	1	"	3	"	Osaka		
Ch'ŏnnam	600	200	"	"	"	"	"	"	"	1	"	3	"	Shibaura		
Omongni	2000	1000	66	22	"	"	"	"	"	3	"	2	"			
"	1500	500	"	"	"	"	"	"	"	1	"	3	"	1		
"	1000	1000	22	3.3	"	"	"	"	"	3	"	1	"			
"	150	50	"	"	"	"	"	"	"	1	"	3	"			
"	200	200	"	"	"	"	"	"	"	1	"	3	"			
Ch'öngdök	4500	1500	66	22	"	"	"	"	"	1	"	3	"	Shibaura		
Waryong	1800	300	22	3.3	"	"	"	"	"	1	"	6	"	"		
Haksö	1200	200	"	"	"	"	"	"	"	1	"	6	"	1		
Yangam	1000	1000	"	"	"	"	"	"	"	5	"	1	"	Hidachi		
Talho	3000	1000	"	"	"	"	"	"	"	5	"	3	"	"		
Hangnam	600	200	"	"	"	"	"	"	"	5	"	3	"	Shibaura		
Haksang	600	200	"	"	"	"	"	"	"	1	"	3	"	"		
Obök	600	200	"	"	"	"	"	"	"	1	"	3	"	"		
Kilchu	1050	350	"	"	"	"	"	"	"	1	"	3	"	1		
Agans	600	200	"	"	"	"	"	"	"	1	"	3	"	"		
Changbaek	346	200	"	"	"	V-V	"	"	"	"	"	2	"	"		
Nodong	346	200	"	"	"	"	"	"	"	1	"	2	"	"		

Name of Substations	Output KVA	Capacity KVA	Voltage	1st	2nd	3rd	Connecting Method	Outdoor or Indoor	Cooling Method	Phase	Frequency	Number Common use	Spare	Maker	Remarks
Yangsa	300	100	22	3.3	"	"	Y-	Outdoor	Self Cooling	1	60	3	"	Shibaura	"
Saengjang	150	50	60	"	"	"	"	"	"	"	"	3	"	"	"
Ch'ongjin (No.2)	20000	4000	66	22	"	"	Y-	"	"	3	"	5	"	Hidachi	
"	6000	6000	"	3.3	"	"	"	"	"	3	"	1	"	Mitsubishi	
"	1500	500	22	3.3	"	"	△-△	"	"	3	"	"	"	3	Hidachi
Musan	1200	6000	66	3.3	"	"	Y-	"	"	3	"	2	"	Mitsubishi	
Ch'ul	6000	2000	"	22	"	"	"	"	"	1	"	3	1	Osaka	
"	1000	1000	22	3.3	"	"	"	"	"	3	"	1	1	Hidachi	
Komusan	3000	1000	11	"	"	"	"	"	"	1	"	3	1	Osaka	
Sunam	3000	1000	22	"	"	"	"	"	"	3	"	3	"	Hidachi	
Tonghae	4000	2000	22	"	"	"	Y-	"	"	3	"	2	"	"	
Tomaktong	350	200	"	"	"	"	"	"	"	1	"	2	"	"	
Nanam	866	500	66	"	"	"	V-V	"	"	1	"	2	"	Osaka	
Kyöngsöng	500	500	"	"	"	"	△-△	"	"	3	"	1	"	"	
Saenggiryöng	500	500	"	"	"	"	"	"	"	3	"	1	"	Mitsubishi	
Yonghyöñ	500	500	"	"	"	"	"	"	"	3	"	1	"	Osaka	
Hoemun	500	500	"	2	"	"	"	"	"	3	"	1	"	Mitsubishi	
Odaejin	600	200	"	"	"	"	"	"	"	1	"	3	"	Hidachi	
Chunam	300	100	"	"	"	"	"	"	"	1	"	3	"	Osaka	
"	500	500	22	3.3	"	"	"	"	"	3	"	1	"	"	
Changdök	260	150	"	"	"	"	V-V	"	"	1	"	2	"	Osaka	
Myönggyöng	225	75	"	"	"	"	△-△	"	"	1	"	3	"	"	
Myöngnam	75	25	"	"	"	"	"	"	"	1	"	3	"	"	
Pubukkong	2400	800	24	"	"	"	Y-	"	"	1	"	3	1	Shibaura	
Yöngan	750	750	66	"	"	"	"	"	"	3	"	1	"	Osaka	
Hoeryöng	350	200	22	"	"	"	V-V	"	"	1	"	2	1	Shibaura	
"	1200	400	"	"	"	"	△-△	"	"	1	"	3	"	Mitsubishi	
Yöngan	4000	2000	66	22	"	"	Y-	"	"	3	"	2	"	Shibaura	
"	300	100	22	3.3	"	"	△-△	"	"	3	"	3	"	Fuji	
Kungsim	1500	500	66	3.3	"	"	"	"	"	1	"	3	"	Shibaura	
Turim	500	500	22	3.3	"	"	"	"	"	3	"	1	"	Mitsubishi	
"	750	250	"	"	"	"	"	"	"	1	"	3	"	Hidachi	

Name of Substations	Output KVA	Capacity KVA	Voltage 1st	2nd	3rd	Connecting Method	Outdoor Indoor	Cooling Method	Phase	Frequency	Common use Number	Spare Number	Maker	Remarks
Namyang	620	300	66	3.3	"	V-V	Outdoor	Self Cooling	1	60	2	3	Nishijima	"
Yusön	1950	650	22	"	"	"	"	"	1	"	3	1	"	"
Pungin	1800	600	66	3.3	"	"	"	"	1	"	3	1	Shibaura	"
Sangsambong	300	100	22	"	"	"	"	"	1	"	3	1	Hidachi	"
Chungdo	100	50	"	"	"	"	"	"	3	"	2	1	Osaka	"
Soam	100	50	"	"	"	"	"	"	3	"	2	1	Osaka	"
Tonggwan	150	60	"	"	"	"	"	"	3	"	3	1	"	"
Hakpo	1800	750	66	"	"	V-V	"	"	1	"	2	1	Shibaura	"
Chongsöng	750	750	"	22	3.3	"	"	"	3	"	1	1	Osaka	"
"	225	75	22	3.3	"	"	"	"	1	"	3	1	Fuji	"
Hungyung	900	300	66	"	"	"	"	"	1	"	3	1	Shibaura	"
Kilgonwön	3000	1000	"	"	"	"	"	"	1	"	3	1	Osaka	"
Unggi	900	300	"	"	"	"	"	"	1	"	3	1	Shibaura	"
Kwanghae	900	300	"	"	"	"	"	"	1	"	3	1	Osaka	"
Pugō	300	300	22	"	"	"	"	"	3	"	1	1	Hidachi	"
Ch'okchi	1000	500	"	"	"	"	"	"	3	"	2	1	Osaka	"
Najin	1500	500	66	3.3	"	"	"	"	1	"	3	1	"	"
Kumhwa	300	100	"	"	"	"	"	"	1	"	3	1	Shibaura	"
Kumsöng	2100	350	"	"	"	"	Indoor	"	"	"	6	2	"	"
Yangjiri	2700	900	"	"	"	"	"	"	1	"	3	1	Mitsubishi	"
"	3000	1000	"	22	"	"	Outdoor	"	"	"	3	1	Hidachi	"
Ch'angdo	3000	1000	"	"	"	"	"	"	"	"	3	1	Fuji	"
Sinan	300	100	"	3.3	"	"	"	"	"	"	3	1	Mitsubishi	"
Pyönggang	300	100	22	"	"	"	Indoor	"	"	"	3	1	Hidachi	"
Changjön	600	300	"	"	"	"	"	"	"	"	3	1	"	"
Kohō	600	200	"	"	"	"	Outdoor	"	"	"	3	1	Shibaura	"
Haknang	1500	500	"	"	"	"	"	"	"	"	3	1	Hidachi	"
Mundüng	300	100	"	"	"	"	"	"	"	"	3	1	Shibaura	"
Hwagye	87	50	"	"	"	V-V	Indoor	"	"	"	2	1	Hidachi	"
Silli	300	100	"	"	"	"	Outdoor	"	"	"	3	1	"	"
Yangsong	600	200	"	"	"	"	"	"	"	"	3	1	Shibaura	"
Yonch'on	1200	400	"	"	"	"	"	"	"	"	3	1	Hidachi	"

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Name of Substations	Output KVA	Capacity KVA	Voltage	1st	2nd	3rd	Connecting Method	Outdoor or Indoor	Cooling Method	Phase	Frequency	Number in use	Spare	Maker	Remarks
Sabuk	150	50	66	3	3		△-△	Outdoor	Self Cooling	1	60	3		Hidachi	
Sokch'ō	600	200	22	"	"			"	"	1	"	3		Shibaura	
Yangyang	3000	1000	66	22	3	3	△-Y	"	"	"	"	3	1	Hidachi	
Sapbang	4000	4000	"	"	"		△-△	"	"	3	Z	1		Fuji	Electric Railroad
"	75	75	22	66			"	"	"	3	"	1		"	"
Pokkye	4000	4000	66	22			"	"	"	3	"	1		Shibaura	"
(354 KV)	75	75	22	66			"	"	"	1	"	1		"	"
Munpyǒng	1500	15000	154	66			"	"	"	3	"	1		"	
Chǒngjin	100000	100000	120	"			Y-Y	"	"	3	"	1		"	
"	20000	20000	100	"			Y-△	"	"	3	"	1		"	
"	30000	15000	"	"			Y-Y	"	"	3	"	2		Mitsubishi	
Aoji	34500	34500	"	"			Y-△	"	"	3	"	1	1	Shibaura	
"	5000	5000	"	"			"	"	"	"	"	1		Fuji	
Kilchu	10000	3333	110	66			"	"	"	1	"	3	1	Mitsubishi	
Sinkilchu	40000	40000	110	11			"	"	"	3	"	1		Shibaura	
Yondupyǒng	900	300	66	33			△-△	"	"	1	"	3	2	Osaka	
Yusang	500	300	"	"			Y-Y	"	"	1	"	3	1	Osaka Nishijima	
Tanch'on	300	100	"	"			△-△	"	"	1	"	3		Osaka	
Ipa	1000	500	66	22			"	"	"	3	"	2	1	"	
Kōjin	600	200	22	3	3		"	"	"	1	"	3			

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## (1) Generation of Electric Power

<u>Power Plant</u>	<u>Power Station</u>	<u>Generating Capacity</u>	<u>Days</u>	<u>Hours</u>	<u>Average Power (KV)</u>	<u>Maximum Power (KV)</u>	<u>Average Maximum Power</u>	<u>Rate of Burden (percent)</u>
Supung		5000 37,474,000 (KWH)	30	720 H	52,047	72,000	65,000	80.0
		6000 103,808,500	"	"	144,178	212,000	157,633	92.0
	Total	141,282,500	"	"	196,226	275,000	213,133	90.0
	Power Station							
Changjin-gang	No. 1	54,864,400	"	"	76,200	121,400	94,813	80.0
	No.2	37,558,600	"	"	52,165	85,200	67,580	70.6
	No.3	14,505,400	"	"	20,563	34,600	26,603	78.6
	No.4	12,944,000	"	"	17,978	28,000	23,800	75.3
	Total	120,172,400	"	"	160,906	203,500	95,633	85.5
	Power Station							
Puchon	No.1	43,891,600	"	"	609,597	78,000	68,766	89.0
	No.2	12,915,000	"	"	179,375	23,000	20,600	90.0
	No.3	4,401,120	"	"	61,127	10,800	81,147	75.3
	No.4	2,412,500	"	"	33,507	6,100	45,337	73.0
	Total	63,619,620	"	"	883,606	170,900	120,064	82.0
	Power Station							
Hoch'on-gang	No.1	53,627,000	"	"	74,483	106,000	85,433	82.0
	No.2	25,469,000	"	"	35,375	50,000	42,833	72.0
	No.3	19,182,000	"	"	26,642	39,000	32,349	82.7
	No.4	21,834,000	"	719H-30	30,328	40,000	34,300	88.0
	Total	120,112,000	"	720	166,822	-	-	-
	Power Station							
Puryong	No.1	4,502,520	"	719H-55	6,249	10,320	7,037	89.0
	No.2	485,376	"	705H-30	674	1,392	1,016	66.0
	Total	4,987,896	"	719H-55	6,923	-	-	-
	TOTAL	125,099,897	"	720	173,750	-	-	-
	Power Station							
Kangwon	No.1	40,560	9	116H-20	56	516	108	16.0
	No.2	2,049,160	30	720	2,846	6,284	39	71.0

<u>Power Plant</u>	<u>Power Station</u>	<u>Generating Capacity (KWH)</u>	<u>Days</u>	<u>Hours</u>	<u>Average Power (KW)</u>	<u>Maximum Power (KW)</u>	<u>Average Maximum Power</u>	<u>Rate of Burden (percent)</u>
Kangwon	No.1	40,560	9	116H-20	56	516	108	16.0
	No.2	2,049,160	30	720	2,846	6,284	39	71.0
	No.3	376,800	17	376H-10	523	3,100	1,007	29.0
	No.4	347,040	15	326	482	2,448	773	31.0
	Total	2,813,560	30	720	2,908	11,796	5,624	70.0
Hwachon	Hwachon Power Station	4,291,560	30	678H-36	5,361	13,200	8,560	76.0
	Total	7,105,120	30	-	9,869	-	-	-
	Grand Total	5000	27,474,000	30	720H	52,470	72,000	64,100
Grand Total	6000	419,805,536	30	"	583,636			
Grand Total	457,279,536	"	"	636,116				

## (2) Supply of Power

## A. Transformer Substations

<u>Name of Substation</u>	<u>Volume of Power Supplied</u>	<u>Days</u>	<u>Hours</u>	<u>Average Power (KW)</u>	<u>Maximum Power (KW)</u>	<u>Average Maximum Power (KW)</u>	<u>Rate of Burden (percent)</u>
Pyongyang No.1	31,603,644	30	720H	43,908	67,676	-	-
Pyongyang No.2	10,312,732	"	"	14,303	27,053	-	-
Namp'o	16,064,000	"	"	22,311	28,000	-	-
Tasato	8,922,000	"	"	12,392	21,000	14,450	94
Unsan	10,226,100	"	719H-18	14,254	21,500	18,500	96
N/W. Total	77,175,476	"	720H	107,188	-	-	-
Hungnam	98,759,297	"	720	137,664	206,000	144,430	-
East Hungnam	52,937,000	"	"	73,524	108,000	79,907	-
Yonghung	46,627,000	"	"	64,759	91,000	74,270	-
Pongung	33,306,248	"	"	46,258	69,500	56,980	-
Yongsong	6,816,776	"	"	9,468	20,000	13,903	-
Munpyeong	4,099,500	"	211H-20	5,694	9,150	7,577	-
Pongung (66 KV)	4,196,500	"	"	5,828	10,000	8,327	-
Chongjin	12,109,920	"	720H	16,819	29,900	21,273	-
Aoji	7,767,900	"	"	10,789	15,139	13,114	-
Kilchu	2,359,000	"	"	3,276	6,000	4,713	-
Sinkilchu	3,057,500	"	718H-36	4,246	8,250	5,891	-
Songjin	12,183,960	"	720	16,922	33,880	19,849	-
NE Total	284,219,490	"	"	3394,748			
Grand Total	361,394,960	"	"	501,936			

## B. Special Supply

User	Volume of Power Supplied	Days	Hours	Average Power	Maximum Power	Average Maximum Power
Hungnam Factory	238,445,321	30	720H	336,173	369,500	339,090
Chongjin Steel Mill	1,293,200	"	719H-54	1,796	4,600	2,613
Songjin "	12,183,960	"q	720H	16,922	37,886	19,849
Kilchu Paper Mill	3,057,500	"	718H-36	4,246	8,250	5,891
Puryöng Metallurgy	5,386,264	"	717H-33	7,481	-	-
Aoji Factory	7,063,200	"	719H-37	3,810	14,160	11,793
Kangsön Steel Mill	5,136,000	"	717H-54	7,133	14,000	
Nampö Light Metal	365,000	"	720H	517	1,000	
Nampö Refinery	4,462,123	"	717H-23	6,197	1,108	
Pukchung Machine	212,900	"	720H	296	100	379
Sunch'on Chemistry	632,741	"	"			
Chöngsu "	5,442,340	"	"	7,559	2,200	14,307
Hwanghae Iron Mill						

## C. Interior of Power Plants

Power Department	Power Station	Volume of Power Supplied	Days	Hours	Average Power	Maximum Power	Rate of Burden
Supung	Supung	331,490	30	720H	410		
Changjingang	Power S"	18,128	"	718H-42	94	151	
	No.1	94,157	"	720H	131	192	
	No.2	21,427	"	"	31	53	
	No.3	28,290	"	"	39	70	
	Total	212,002	"	"	294		
Puchöngang	Power Station				142		
	No.1	10,222	"	"	63		
	No.2	45,619	"	"	23		
	No.3	16,398	"	"	21		
	No.4	14,973	"	"	249		
	Total	179,212					
Höchöngang	Power Station				130	101	
	No.1	65,000	"	719H-56	94	58	60
	No.2	33,420	"	720	40	100	57
	No.3	37,720	"	"	54	90	53
	No.4	31,820	"	719H-55	43	91	54
	Puryong No.1	25,564	"	716H-30	17		
	" No.2	12,193	"	720	289		
	Total	208,918					

<u>Power Department</u>	<u>Power Station</u>	<u>Volume of Power Supplied</u>	<u>Days</u>	<u>Hours</u>	<u>Average Power</u>	<u>Maximum Power</u>	<u>Rate of Burden</u>
Kangwön	Hwachön	42,624					
	Kümgangsan	5,593					
	Total	48,217					
Total	Grand Total	979,888					

## D. Home Use of Power Plants (Internal Power)

<u>Power Department</u>	<u>Power Station</u>	<u>Volume of Power Supplied</u>	<u>Days</u>	<u>Hours</u>	<u>Average Power</u>	<u>Maximum Power</u>	<u>A.M.P.</u>	<u>R/B</u>
<b>Power Stastion</b>								
	No. 1	10,176.47	30		1413			
Changjin-gang	No.2	11,172.33	"		163			
	No.3	49.29	"	720	7			
	No.4	64.80	"	"	9			
	Total	11,462.89	"	"	1592			

## E. Local Burden of Each Power Plant

<u>Power Department</u>	<u>Power Station</u>	<u>Volume of Power Supplied</u>	<u>Days</u>	<u>Hours</u>	<u>Average Power</u>	<u>Maximum Power</u>	<u>A.M.P.</u>	<u>R/B</u>
Sup'ung	Sup'ung	3,966,865	30	720H	5533			
<b>Power Station</b>								
	No.1	14,465,723	"	719H-46	2037			
Changjin-gang	No.2	2,450	"	720	3			
	No.3	9,151	"	"	13			
	No.4	1,618,795	"	"	2248			
	Total	3,097,119	"	"	4301			
<b>Power Station</b>								
Puch'on-gang	No.1	109,768	30	720H				
	No.2	16,384	"	719H-52				
	No.3	17,960	"	720				
	No.4	276,810	"	"				
	Total	420,922	"	"				

## (3) Electric Transmission Lines

<u>Name of Transmission Line</u>	<u>Cap. of Power Trans.</u>	<u>Avrg. Po. Days</u>	<u>Maximum Power Transmitted</u>	<u>Avg. Max. Power</u>	<u>Rate of Burden</u>	
Pyöngyang 2nd Line	96,254,100	30	720H	133,686		
" Connecting Line						
	54,939,000	"	"	76,304		
" 1st Line	18,598,694	"	"	25,832		
(Transmitting 1-2)						
" 1st Line (Receiving 1#2)	8,596,300	"	"	11,939		
Hamgyöng-bukto	10,930,000	"	"	15,181	47,000	23,066
No. 1 Line						
Hamgyöng-bukto	17,050,000	"	"	23,687	51,000	33,766
No. 2 Line						
Hamgyöng-namdo	8,620,000	"	"	11,972	34,000	20,833
No. 1 Line						
Hamgyöng-namdo	8,560,000	"	"	11,889	34,000	23,733
No. 2 Line						
Tonghëng South L.	51,643,000	"	709H-5	74,728	99,000	
Taedong Line	29,637,930		720	41,164	57,780	52,644
Anshan Line	6,562,070	"	"	9,114	18,722	10,389
Ch'engjin Line	11,061,600	"	655H-30	15,363	29,900	

(4) Volume of Power Generated and Supplied;  
Comparison of Plan and Results

<u>Kind</u>	<u>Volumne of Power</u>	<u>Comparison of Plan and Results</u>
Total Volume Generated	457,279,536	
Supply NE 1st Total	354,219,490	Plan: 474,642,000
NW 1st Total	77,157,476	Result: 467,279,536
Volume of Power Inside Plants	977,888	Ratio: 96.3 percent
Home Use of Plants	3,564,909	1948 - 438,874,676
		1949 - 407,279,536
Local Burden of Plants	20,418,473	Ratio: 104.1 percent
Transmission to China	31,180,905	
Total	422,539,141	
Percentage of Loss	100 x <u>457,279,536 - 422,539,141</u> <u>467,284,536</u>	7.5 percent

## (5) Water Level

<u>Place</u>	<u>Water Level</u>	<u>1m 3/5mc</u>	<u>m 3/5cc</u>	<u>Temperature</u>			<u>mm.</u>
		<u>Flooding Water</u>	<u>Water Harnessed</u>	<u>Highest</u>	<u>Lowest</u>	<u>Precipitation</u>	
Supung	11,622	389.53	30,917	34	11	98.6	
Changjin-gang	Dam No.1	7,180	o3.31	27.5	-1	54.7	
	Dam No.2	3,020	37	26	-2	59.9	
Oych'ongang	Dam No.1	7,555	5.52	10.84	29	-1	
	Dam No.2	2,785	1.50	10.84	26	-1.5	
	Dam No.3	0.690	1.94	10.59	26	0	
Hoch'ongang	Yondup'yong	3.76	11.76		29	13	68.7
	Hwangsup'yong	3.75	2.19		29	16	52.9
	Naejungnii	7.46	1.22		29	12	73.5
	Sach'opyong	6.27	4.16	20.14	31	17	104.6
	Puryong	0.950	2.13	1,533			
Kangwon	Hwach'on	175.18	68.4	15.9	31	17	55.9
	Kumgangsan	12,718	50,08	1.88	18	10	330.6

## (6) Electric Accidents at Power Plants

<u>Kind Department</u>	<u>TC</u>	<u>H</u>	<u>S</u>	<u>No.</u>	<u>Electric Shock</u>	<u>W</u>	<u>G</u>	<u>T</u>	<u>S</u>	<u>O</u>	<u>T</u>	<u>W</u>	<u>G</u>	<u>T</u>	<u>S</u>	<u>O</u>	<u>T</u>	
	<u>Da</u>	<u>n</u>	<u>s</u>	<u>HS</u>	<u>Employees</u>	<u>Public</u>	<u>a</u>	<u>Genera</u>	<u>Trans</u>	<u>swi</u>	<u>ot</u>	<u>to</u>	<u>Water</u>	<u>Genera</u>	<u>Trans</u>	<u>swi</u>	<u>ot</u>	<u>Total</u>
Supung Power	1	1														1	1	
Changjingang Power	3	2	1													2	2	
Puch'ongang Power	1	1														1	1	
Hoch'ongang Power	4	2	2													2		
Kangwon Power	1		1															
Total	10	6	4													2	4	6

Damages to Power Plants

<u>Province</u>	<u>Power Plant</u>	<u>Machines Damaged</u>	<u>Capacity</u>	<u>Quantity</u>	<u>Outline of Damages</u>
Hamgyöng namdo	Pucgöngang No.1 Power Station	Generator	KVA 36,000	2	On one generator, 56 armature coils cut & Burnt due to break- down of slators; On another generator, the casing destroyed. Heavily crippled & outdoor equipments destroyed.
	" "	Transformer	11/100 KVA 36,000	1	
"	"	Iron Pipe			No.3 Iron Pipe ruined & No.4,5 Iron Pipes burst.
"	Changjingang No.1 Power q Station	Transformer	11/110 KVA 40,000	1	Two bushes (110KV), damaged but repairable.
"	"	Arc Suppressing Reactor		1	

No.1 Damages to Important Transformers Above 66KV (as of September 1950)

<u>Province</u>	<u>Name of Substation</u>	<u>Machines Damaged</u>	<u>Capacity</u>	<u>Quantity</u>	<u>Outline of Damages</u>
Hamgyöng- bukto	Aoji	Transformer	110/11 KVA 34,500	1	Outdoor structure & bush all damaged; tank partly burst.
"	Chöngjin No.2	"	66/22 4,000 "	2	One, damaged in bush & radiator; another, bom- bed out.
"	Chöngjin No.1	"	220/66 100,000 "	1	Bushes & coolers total- ly destroyed.
"	" "	"	110/66 15,000 "	2	One, burnt out; another, lost insulator due to bursting of tank.
"	" "	"	110/66 20,000 "	1	Internal parts burnt in bombing.
"	Söngjin	"	110/22 10,000 "	3	Seriously burnt; outdoor equipment, Switchboard & all destroyed.
"	Kilchu Paper Mill	"	66/33 6,800 "	1	Destroyed with the factory.
"	Kilchu	"	110/66 3,333 "	2	Bush & tank partly crippled
"	Hoeryöng	"	66/33 750 "	3	Oil leaked through bullet holes on tanks in bombing
"	Omong	"	66/22 1,000 "	2	Bushes & radiators all destroyed
"	"	"	22/33 1,000	1	" "

<u>Province</u>	<u>Name of Substation</u>	<u>Machines damaged</u>	<u>Capacity</u>	<u>Quantity</u>	<u>Outline of Damages</u>
Hamgyöng-namdo	Hüngnam	Transformer	110/11 KVA 50,000	7	Irreparably crippled, outdoor equipment, switchboards & building burnt.
"	"	Rotary Converter	3,500 "	45	30 percent thoroughly crippled; 7 converters reparable; other equipment destroyed.
"	Pongung	Transformer	110/11 34,500 "	2	Due to breakdown of pushings & explosion of transformer tanks, insulator oil burnt & washed away.
"	"	"	110/66 5,000 "	1	"
"	Yonghung	"	350/11 60,000 "	2	Due to machine-gun fire, bush damaged, tanks partly holed, and oil washed away, but repairable
"	Ünbong (Elec. R/R)	"	66/22 2,500 "	1	Exploded and burnt with the substation.
"	Kwanpyöng	"	66/22 4,000	2	One damaged in addiator and bush during removal, but repairable; one, partly damaged through machine gunning.
"	Hongwön	"	66/33 750 "	3	Partly damaged through machine gunning but repairable.
Kangwön	Wönsan	"	66/22 2,500 "	2	One, inwardly burnt; one slightly damaged (repairable)
"	Kümhwä	"	66/33 300 "	3	All burnt & destroyed
"	Kalma	"	66/22 2,500 "	2	"
"	Yangjiri	"	66/22 900 "	3	One, inwardly burnt up; two, partly destroyed (repairable)
Pyöngan-namdo	Pyöngyang No.1	"	110/66/11 15,000 "	6	Three self-cooling transformers burnt; one water cooling transformers destroyed & two others externally damaged.
"	"	Arc Suppressing Reactor	19,000 "	1	Pushing (154KV) damaged; tank pierced by bullets; insulator oil washed away (repairable)

<u>Province</u>	<u>Name of Substation</u>	<u>Machines damaged</u>	<u>Capacity</u>	<u>Quantity</u>	<u>Outline of Damages</u>
Pyongan-namdo	Pyöngyang No. 1	Phase modifier	15,000KVA	1	Motor damaged; coil cut by bullets, phase-regulator coil partly destroyed.
"	"	Transformer	66/33 750 "	1	Burnt up (Substation all destroyed)
"	" No.2	"	220/66 100,000 "	2	One bush damaged, tank pierced, & oil washed away, one externally damaged.
"	"	Series Transformer	100,000 "	2	One, exploded and burnt; one, tank pierced & oil washed away.
"	"	Voltage Regulator	100,000 "	2	"
"	Namp'o	Transformer	22/66 100,000 "	1	Internally burnt up; switchboard & outdoor equipment destroyed (irreparable)
"	"	"	100,000 "	1	"
"	"	Voltage Regulator	100,000 "	1	"
"	Söngyori	Transformer	66/11 12,500 "	1	Radiator destroyed & oil washed away.
"	Inhungnai	"	66/33 10,000 "	1	Oil tank exploded
Pyongan-namdo	Söngchön	"	66/22/3.3 350 "	2	Exploded and burnt XXXXXXXXXdamagedXXXXXX
"	Sunch'on	"	66/22 750 "	2	Bush totally damaged; & tank & radiator partly damaged.
"	Sukchön	"	66/22 1,500 "	4	Exploded and burnt
Pyongan-bukto	Sakchu	"	66/22 750 "	4	All destroyed & burnt (irreparable)
"	Maengjungni	"	66/22/3.3 1,000 "	4	"
Hwanghae-Chaeryöng do	"	"	66/22 1,000 "	2	" Outdoor switchboard partly destroyed
"	"	"	66/22 750 "	2	"
"	Sariwön	"	66/22 1,500 "	2	One, burnt up; One partly damaged and oil washed away.
"	"	"	66/3.3 750 "	1	Exploded and burnt.
Hwanghae-Haeju do	Transformer	66/22/3.3 1,200KVA	4	Two, completely damaged; two slightly damaged (reparable)	
"	Namchön	"	66/22/3.3 750 "	4	Exploded and burnt
"	Kyeyöng	"	66/22 1,500 "	4	"

Power Distributing Lines (as of June 1949)

<u>Section</u>	Length of Electric Wire			Length of Telephone Wire			Number of Supports			Number of Transformers		
	High Voltage	Low Voltage	Total	High Voltage	Low Voltage	Total	Iron Power	Wooden Column	Total	Number	KVA	
Hoch'ongang	62,258	3,946	66,204	169,817	8,172	177,989	1210	1210				
Changjingang	26,593	4,713	3,606	77,031	7,865	84,996	567	567		150	2362	
Puch'ongang	16,526	2,921	19,447				302	302		81	1771	
West Transmission												
Pyongyang	4,030	3,570	7,600	12,090	7,140	19,230	143	143		16	265	
Power Distributing Center	590,100	324,300	915,400	162,340	9,761	2519500	2	13,885	13,887	4401	41938	
Pyongan-namdo												
Power Distributing Center	418,791	530,129	1449920	3024953	1007509	4033412	6	26,384	26,390	2814	18582	
Haeju Power Distributing Center	696800	525100	1221960	1911200	1152900	3064100	2	22001	22003	4191	27773	
Siniju Power Distributing Center	545267	377802	923069	1578042	839390	2412432	17	16745	16762	24597	24035	
Hamhung Power Distributing Center	554710	455700	1010400	6634400	955700	2623100	4	12499	14003	2045	21366	
Wonsan Power Distributing Center	967211	852466	1819677	2156139	1904972	4561100	32143	32143		3799	39785	
Chongjin Power Distributing Center	1108500	771210	1879710	2993700	1648300	4642000	26954	26954		2983	32884	
Nampo Power Distributing Center	380600	228300	678900	701200	456600	1157800	10505	10505		1582	13290	
Kanggye Power Distributing Center	325671	188116	513787	742957	362921	1145878	8196	8196		962	9179	
Tanchon Power Distributing Center	891684	741134	1632858	2241221	1455716	3696937	29879	29879		2264	20988	
Total	7060035	5009447	12069478	19401244	10816285	30217527	31	203113	203113	27746	255218	

Damages to Electrical Equipment at Pyøngyang

<u>Kind</u>	<u>Length Location (M)</u>	<u>Extension Length (M)</u>	<u>Number of Supports</u>	<u>Transformer on poles</u>	<u>U.S. on poles</u>	<u>Re- mark</u>
Equipment as of 25 June 1950	209,738	1,151,041	5,473	2,733	326	
Damages as of 20 October 1950	14,856	116,250	193	350	60	
Equipment as of 18 November 1950	194,882	1,034,791	5,280	2,383	266	

Survey in November 1950  
by the Pyøngyang City Power Distributing Center.

No. 1 Damage to Transformer Substations

<u>Name of Substation</u>	<u>Location</u>	<u>Capacity KVA</u>	<u>Tools and Machines</u>	<u>Standard Size</u>	<u>Quantity</u>	<u>Outline of Damage</u>	<u>Extent of Loss</u>	<u>Repair</u>
Pyongyang	Munsuri	93,750	Transformer	154/66/11KV Water cooling	15,000KVA 1	Completely ruined by direct bombing	Big damage	Impossible
"	"	"	" Self Cooling	"	2	Burnt	Half-damage	Possible
"	"	"	" water "	"	2	Oil leaked	small-damage	"
"	"	"	" self "	"	1	"	"	"
"	"	"	66/33KV 750KVA water cooling	2	"	Scorched in bombing	Half-damage	"
"	"	"	11/33KV 500 "	1	"	Bush damaged	Small-damage	"
"	"	O.C.B.	Self cooling	154 KV 66KVA	2	Bullet Hits on Bush and Oiltank	"	"
"	"	"	P. coil	"	1	Burnt	"	"
"	"	P. coil	66KV 4800KVA	"	1	"	"	"
"	"	D.S.	66KV	"	5	Bombing	Big damage	Impossible
"	"	P.T.	"	"	2	"	Half-damage	Possible
"	"	R.T.	"	"	2	"	Big-damage	Impossible
"	"	C.T.	"	"	12	"	"	"
"	"	O.C.B.	Lightening Arrestor	"	5	Bush Damaged	Half-damage	Possible
"	"			"	1	"	Big-damage	Impossible

<u>Name of Substation</u>	<u>Location</u>	<u>Capacity</u>	<u>Tools and Machines</u>	<u>Standard Size</u>	<u>Quantity</u>	<u>Outline of Damage</u>	<u>Extent of Loss</u>	<u>Repair</u>
Pyongyang	Munsuri		P. Coil	154KV 17000KVA	1	Bush damaged	small-damaged	Possible
"	"		Iron Frame	154KV 66KV	10	Bombing	Big-damaged	Impossible
"	"		Oil Phase Machine	16000KVA	1	Motor and Dynamo damaged	Small-damaged	Possible
"	"		Switchboard	No.1TY	2	Bombing	"	Impossible
East Pyongyang	Söngyori	KVA 17,000	Three Phase Transformer	66/11KV k2500 KVA	1	Radiator Pierced by bullet Hits	"	Possible
"	"		O.C.B.	66KV	1	Bush-Insulator damaged	"	"
"	"		"	3.3KV	4	Bush damaged by Bombing	"	"
"	"		Single Phase Transformer	66/3.3KV 15,000KVA	1	Radiator damaged and oil leaked	"	"
"	"		"	"	1	Oil leaked	"	"

No. 2

## War Damage to Transformer Substations

Name <u>Substation</u>	Location	Capacity	Tools and Machines	Standard size	Quantity	Outline of Damage	Extent of Loss	Repair
Nangnang	Nangnangni, Pyöngyang	KVA 8700	Single Phase Transformer	66/22 KV 2500 KVA	1	Bush Damaged	Small-damaged	Possible
"	"	P.T.		22KV	2	Oil leaked due to bombing	Half-damaged	"
"	"	C.T.		66KV	1	Bush (1m <sup>2</sup> ) damaged	"	"
"	"	D.S.		22KV	2	Ruined due to bombing	Big-damaged	Impossible
Changgnni	Pyöngyang	1,200	No damage					
Pyöngchölli	Pyöngyang	6,000	Single Phase Transformer	22/33KV 2,000KVA	2	Radiator bombed and Oil leaked	Small-damaged	Possible
"	"	Lightening Arrester		33KV	1	Ruined	Big-damage	Impossible
Yusöngni	Pyöngyang	4,500	Relay	3.3KV	14	"	"	"
Inhöngni	Pyöngyang	16,000	Three Phase Transformer	66/3.3 KV 10,000KVA	1	Oil leaked	Small-damaged	Possible
Sadong	Pyöngyang	2,100	No damage					
Imwön	Misalli, Pyöngyang	1,200	No damage					
Chochon	Chödamni, Yongsanmyön, Taedonggun PYöngya-namdo	22/110KV 66KV 400A 22KV 400A 3.3KV 400A	P/T. L.S. L.S. "	P.T. 66KV 400A 22KV 400A 3.3KV 400A	2 1 6 18 3	Completely burnt Machinegunned Completely burnt "		
Chochon	Chödanni, Yongamnyon, Taedongun, Pyöngan- namdo	130 Tons 30	Crane		1	Damaged by 30 percent		
		5A	Ampere- meter		2	Completely burnt		
		5A	"		1	"		
		3/1.0	Voltmeter		1	"		
		500D	"		2	"		
		2001L2	Resistor		1	"		
		30 Circuit Lines	Flashpoint Tester		1	Completely burnt		
			Switchboard		1	"		
			Telephone set		7	"		
		4M	DS Insulating Pole		4	"		
		4M	ICB Rod Pole		2	"		
		30 60T	Signal motor		1	"		
		250V/50A	Electromag- netic Switch		2	"		
			Electric welder		1	"		
			Drier		1	"		

## War Damage (As of October 1950 at Time of Recapture)

Name of Substation	Location	Equipment & Output KVA	Tools & Machines	Outline of Damage	Remarks	Oil
Ch'edamdong, Yongsamyon, Taedonggun	100,000x2 220KV/66KV	Tr.	Bullets penetrated center of No. 1 Tr. Case; Bullets penetrated top of No. 2 Tr. Case; one Bush damaged	No. 1 impossible to Use; No. 2 useable after Repair	Oil Remained 60 percent at each Tr. (Volume of OT 77800L)	
" "	1300x4 KVA (66/22KV)	Tr.	Completely burnt in bombing	Bombing	None	
" "	300x1 KV (66/3.3)	Tr.	Case punctured in Machinegun fire, but repaired	Usable after Supply- None ing oil, and drying case.		
" "	300x3 122/3, 3KV)	Tr.	Completely burnt in bombing	Unusable	None	
" "	66KV 1200 2 600A	O.C.B.	"	"	"	
" "	22KV 400A2	"	O.C.B. Bush all damaged	Usable after re-placing Bush	Some	
" "	220KV 800A 1 phase	E.C.B.	One phase of E.C.B. Bush Damaged	Ditto	None	
" "	66KV 600A	E.C.B.	(200/5A) at Room, one phase damaged	Usable after re-replacing T Room	"	
" "	Switchboard 8 Cable board 1 Inside board 1 Stationboard 6	Switch board	Completely burnt	Unusable		
" "	10000KVA 2	Voltage Regulator	One set burnt; one set pierced in radiator	Usable	50 percent Oil remained in each set.	
" "	Arc Supressing (20000KVA)	Reactor	Completely burnt	Unusable	None	
" "	66KV	L.C.B.	Insulator damaged	Usable after re-replacing insulator		
" "	40N <sup>3</sup> 2	Oil tank	Burnt in machinegun fire		500 l. remained	None
" "	66KV 50/5x2 5/5x1 22KV 40/5x2 50/5x2	6.7.	Completely burnt			
" "	Cable (62) Cotton Cable High Voltage Cable High Frequency	30000m 3000m 1000m 400m	Completely burnt " " " "	Unusable		
" "	D.G. Insulator (220KV) D.S. Insulator (66KV)	20 10	Damaged in Bombing "			
Chinnamp'o Ohori, Chinnamp'o	1,000,000KVA	Transformer	Unusable			
" "	10000KVA	Voltage Regulator	"			
" "	400A	O.C.B. 2	"			
" "		Switchboard 12	"			
" "		High Voltage Switchboard	"			
" "	Special Core	Insulator Oil	1800001 L.			
" "	T.10m/m 6 core Lead covered Cable		5000 M.			
" "	7/0.8M/M 4 core	"	5000 m.			
" "		Radiator	"			
" "	15 percent	Electric Fan	4			
" "	25 "	Circulating Electric motor	2			
" "	Wall hanging	telephone set 5	One high-powers set			
" "	High power	"	2			
" "	220T 100A	Three-Pole Switch	20			
" "	100A	"	30			
" "	112A	Storage Battery	2 sets			
" "	Office Use	Swivel Chair	2			
" "	"	Desk	2			
" "	"	Electric Clock	2			
" "	30 Circuit Lines Converter		1			
Wondumni Wondumni, Kuisangnyon, Yongsanggun	6000KVA & 450 KVA	Bushes 24	No damage		None	
Kiyang Kiyangni, Chemical Tongjinyon Factory Kangsangun Substation	1000 KVA (66.7)	Transformer	Completely damaged	Bombing	None	
" "	66KV E.C.B. 2	E.C.B.	"	"	"	
" "	1/KV O.C.B.	O.C.B.	Two bushes damaged	No damage on tank	Some	

War Damage November 1950  
Kangsang Steel Mill  
Substation

**POOR ORIGINAL**

<u>Name of Substation</u>	<u>Location</u>	<u>Equipment &amp; Output</u>	<u>Tools &amp; Machines</u>	<u>Outline of Damage</u>	<u>Remarks</u>	<u>Oil</u>
Nambo Chemical Factory	Hadaeduri, Chinnampō	1500KVA	Transformer 3	On one transformer, bush all damaged	Usable by replacing bush	None
Substation "	"		OT.	Push damaged		
"	"		D.C. Insulator	Insulator damaged		some
"	"		AW3	All damaged	Unusable	

<u>Name of Substation</u>	<u>Location</u>	<u>Equipment &amp; Output</u>	<u>Tools &amp; Machines</u>	<u>Outline of Damage</u>	<u>Remarks</u>	<u>Oil</u>
Nambo Zinc Substation	Hadaeduri, Chinnambo	KVA 3500x2 12500xl 9850xl	Transformer	Radiator, Push damaged Core damaged	Usable if repaired	None 12 \$
" "	"	"	"	Burnt out	Usable if oil is replaced	None 20\$ "
" "	"	9850xl	"	Commutator damaged		
" "	"	3000xl	Rott	Completely damaged	Unusable	"
" "	"	Nine phase Switchboard	Mercury vapor rectifier	"		
" "	"	3000xl			"	

## War Damage

November 1950  
 Chinnampo Glass Factory  
 Transformer Substation

Name of Substation	Location	Equipment & Output KVA	Tools & Machines	Outline of Damage	Remarks	Oil
Chinnampo Glass Factory Substation	Masalli,	12,500x1	Tr.	1st & 2nd Bushes damaged, & one radiator machine gunned.	Usable	None (12150 L)
Chinnampo	66KV 200A	3,000x1	O.C.B Tr.	Bush damaged No damage from bombing, but the Communists drained oil.	" Usable if supplying oil	Some (3450 L)
	200KVA	66/110Vx2 P.T.		Bush damaged by Communists	Usable	Some
	KVA 4,000x1		Tr.	"	"	"

All damages were done by the Communists before they fled.

## War Damage

October 1950

Name of Substation	Location	Equipment & Output KVA	Tools & Machines	Outline of Damage	Remarks	Oil
Nampo Soda Factory Chinnampo Substation	Tohangni,	22650	Tr.	1st, 2nd, 3rd Bushes damaged	2	None
	Chinnampo	3000KVA	"	Two were fired at by the Communists.	2	"
		4500KVA	"	1st, 2nd Bushes damaged	3	"
		2510KVA	"	All bushes damaged	1	"
		4800KVA	Mercury-Uapor re-ctifier 6	Telegraph-Poles, vacuum- Uapor re- vacuum-meter damaged meter reparable	One is damaged	One is damaged

(a)

Power Distributing Office

Chinnampo

\* \* \*

(2) Real Condition of Operation.

- A. Prior to 25 June 1950, the Namp'o Office of the Pyongan-namdo Power Distributing Department was an affiliated organ of the Bureau of Electricity, Ministry of Industry, Democratic People's Republic of Korea, and its primary function was to distribute power to the Namp'o city, Yonggang-gun, Kangsö-gu, and to one part of Taedong-gu. But, in effect, it also repaired transmission lines, collected power-rates, and disbursed funds that were necessary for power distribution. Transformer substations, however, were beyond its province, because they were operated by the power Transmitting Department, Bureau of Power Control.
- B. Real Conditions as of October 1950. With the outbreak of the June 25 War, the Communists concentrated all efforts in the supply of power for army use. But soon the UN Air Force bombed out the Red military facilities, including munitions factories, located in areas under the jurisdiction of the Namp'o Power Distributing Office. When the Communists suffered heavy casualties in their losing battles, they called out the young employees at this office to the battle field, and almost stopped power distributing activities here due to lack of labor, and at the last stage of their tragic defect, they destroyed and burnt principal transformers and switchboards at the Yusari Substation, in Chinnamp'o, which used to receive current of 220KV from the SUPUNG Power Plant before they took to flight. At present, no electric power is supplied in areas under the jurisdiction of this office.

## (c) Operation Plan for the future.

After the liberation of North Korea by the UN Armed Forces, the inhabitants of the liberated areas regained freedom in every life, and now non-Communist workers are engaged in the restoration activities at this plant, which has been brought under the administration of the Construction Section, Chinnampo Municipality. After an election in North Korea, and with the establishment of an unified Government, the electrical industry will be operated under the direction of the Government.

## (4) General Inventory of Stores (As of 31 October 1950)

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u>	<u>Where fore of Difference in Quantity</u>	
			<u>10 Oct.</u>	<u>19 Oct.</u>	<u>31 Oct.</u>
<b>(Electric Bulbs)</b>					
Electric Bulb	100V/20W		22	0	Supplied to UN Army
Miniature Light Bulb	4.5V			13	
Pilot Bulb	0.11V			25	
Electric Bulb	220V/60W			2	
"	220V/40W			1	
<b>(Electric Wires)</b>					
2nd Class Wire	50 m/m	Kg		57	
"	40 m/m	"		83	
"	32 m/m	"		40	
"	26 m/m	"		8	
"	7/20 m/m	"		20	
3rd Class Wire	7/16 m/m	"		23	
"	18/20 m/m	"		500	
"	61/2.9 m/m	M		35	
4th Class Wire	1.2 m/m	M		6	
"	1.6 m/m	M		5	
"	127/30 m/m	M		20	
Uncoated Copper Wire	5.0 m/m	Kg		50	
"	4.0 m/m	"		10	
"	3.2 m/m	"		30	
"	2.9 m/m	"		28	
Twisted Copper Wire	7/20 m/m	"		190	
"	19/1.8 m/m	"		37	
Wire Cord		M	110	6	Supplied to UN Army
Aluminum Wire (3.2m/m)		Kg		2	UN Army
2nd Class Penmatic?					
Wire	40 m/m	"		14	
Telephone Cable		"		300	
2nd Class Pnematic?					
Wire	3.2 m/m	"		2	
Uncoated Hard Copper					
Wire	7/2.6 m/m	"		0	
Scrap Wire	"	"		660	

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u>	<u>Where fore of Difference in Quantity</u>	
			<u>10 Oct.</u>	<u>19 Oct.</u>	<u>31 Oct.</u>
Cable	7/0.8	M	720		
"	3 Core 225	"	18		
(Insulators)					
High-Voltage					
Petticoat Insulator	6,000V		310		
Low-Voltage "			547		
Outdoor Busba "			26		
High-Voltage Large			78		
Petticoat			36		
High-Voltage					
Three-Pold "					
High-Voltage					
Petticoat "			345		
High-Voltage					
Standoff "			204		
Low-Voltage					
Sarge Double "			106		
Low-Voltage					
Medium Doub1& "			223		
Low-Voltage					
Small Double "			19		
Low-Voltage Large					
Petticoat Z			93		
Low-Voltage Medium					
Petticoat "			5308		
Low-Voltage Small					
Petticoat "			380		
Sabot Knob "			126		
Low-Voltage					
Split-knob "			15		
Low-Voltage Fixed					
Insulator			23		
296 Knob			5,000		
Z Knob			42		
S Knob			178		
Miniature Knob			440		
Insulator-type					
Switch			45		
Flanged Ins-			2523		
ulatorof	"		427		
"			60		
"			622		
"			528		
"			40		
"			545		
"			0		
"			0		
Flangeless In-					
sulator Tube			8,000		
High-Voltage					
Insulator tube			15		

<u>Articles</u>	<u>Standard Specifying Unit</u>	<u>Quantity 10 Oct.</u>	<u>Quantity 19 Oct.</u>	<u>Quantity 31 Oct.</u>	<u>Where fore of Difference in</u>
Double Wire Cleat				3323	
High Voltage Insulator				4	
Flangeless Insulator Tube				3	
"				1	
"				9	
Special High Pet- ticoat Insulator				5	
"				2	
"				27	
(Watt-Hour Meter)					
Watt-Hour Meter	100V/3A			12	
"	5A			797	
"	10A			1,500	
"	100V/15A			1	
"	20A			76	
"	25A			5	
"	30A			20	
"	50A			7	
"	75A			2	
"	100			1	
Three Phase meter	220V/3A			1	
"	10A			89	
"	20A			110	
"	30A			19	
"	50A			18	
"	100A			9	
" (out of order)	20A			1	
High Voltage Meter (outdoor)	3300 5A			1	
" "	30/5A			1	
" "	3300 400/5A			1	
" "	3300 10/5A			1	
" (indoor)	3300 75/5A			1	
" (outdoor)	3300 100/5A			1	
" (indoor)	3300 30/5A			2	
G					
" PT (indoor)	3300/110V 50/5A			2	
(Tools & Machinery)					
Closed Oil circuit					
Switch	100V/100A			9	
" (out of order)	"			4	
"	100V/30A			11	
"	"			1	
Closed Oil circuit					
Switch (Bipolar)	3500V/50A			7	
"	3500/100A			11	
Disconnecting Switch	200A			9	
"	100A			198	
Voltmeter	1500V/100A			6	
Alternative Current					
Volta meter	250/75			10	
"	1000/30			11	

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>10 Oct.</u>	<u>19 Oct.</u>	<u>31 Oct.</u>	<u>Quantity</u>	<u>Where fore of Difference in</u>
Alternative current Voltage meter	250/50			1		X	
Voltameter	1000v/150A			2		X	
Alternative current Voltameter	1000V/50A			1		X	
"				3		X	
'Senda' Stove				10		XX	
'Fukuroku' Stove				1		X	
Electrostatic Condenser	220V/75mm- 220V/100MF			2		X	
"				2		XX	
Voltameter (out of order)	10A			2			
Outdoor Oiler PT				2			
Outdoor Oiler CT				3		X	
Choking Coil	200A						
Current Limiting Resistor				6		X	
PT Porcelain Stand				2			
Meter deflector	110V/30/5A			1			
"	110V 20/5A			2			
"	110V 16/5A			1			
"	110V 400/5A			1			
Transformer Bushing	22KV			2			
Overload Relay				2			
Double, Wire (able head				1			
Ground Detector	22K						
Electro-Magnetic Switch	MA Type			1			
Electro-Magnetic				1			
Crane	440/15 h.p						
Closed antenna Switch (outof order)	3500200A 50A			3			
"				1			
(Tools)				16			
Driver	3 inches			4			
"	6 "			8			
Branch Cutting Seissors				23			
Pickaxe				27			
Mattock				12			
Hoe				338			
File	25 inches			18			
File (Miniature type)	4 "			18			
"	5 "			0			
"	6 "			2			
"	8 "			0			
File	Flat 12 inches			45			
File	Crude 12 "			5			
"	Angle 12 "			4			
"	Flat 14 "			0			
'Handa' Trowel	medium 14 "			1			
"	100 inomlue			1			
"	200 "			3			
Bite	12-16			2			
Saw (Single blade)	large			2			
"	small			2			
Auger	4 'bu'			1			
"	2 'bu'			1			
"	5 'bu'			8			
Electrician's Knife				3			
Sleeve screw				1			
Pinchers							

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u>
			<u>31 October</u>
'Best' (?)	small		0
Wheelbarrow			2
Chisel			8
Drilling auger	5 'bu'		2
"	4 "		1
Monkey Spanner	8 inches		2
"	6 "		2
(Transformers)			
Transformer	1 KVA (burnt)		7
Transformer	2 " "		9
"	1.5 "		1
"	3 "		7
"	4 good		4
"	5 burnt		8
"	7.5 "		3
"	1.5 "		5
"	20 "		3
"	30 good		1
"	50 burnt		8
" three phase	2 "		1
" "	7.5 "		1
"	3KVA burnt		1
"	5 " good		1
Busuda (?)	10A burnt		1
(Fiber Products)			
Hemp Rope	4 'bu'	Kg	11
Flax Rope	5 "	"	120
Manila Rope	7 "	M	0
"	6 "	M	10
(Miscellaneous)			
Paper			350
Straw Rope		Role	36
Bicycle	out of order		4
Dry Battery	"		80
Door wheel	"		18
"			4
Tinplate Fuse (arrier)			34
Fuse-Carrying Container			115
Cement		bag	450
Old Cloth		'kwan'	4
Ceiling Cord tape			2
Stove Hook			10
Iron Ring			18
Tea Pot			2
Hinge			40
Watering Pot			2
Coal		bag	50
Fibrous Filler for Plaster		'kwan'	10
(Lumber)			
Telegraph Pole			7
Low-Voltage Beam	4 ft.		35
"	5 "		240
"	6 "		65
"	8 "		300
Sawn Lumber		'sai'	1,000
Mine Post			20
(Non-ferrous)			
Sealing Lead			5370
Poles		Kg	2

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u>
			<u>31 October</u>
(Oils and Fats)			
Transformer Oil		L	1,728
" (adulterate)		L	<del>105</del> 405
Mobile Oil	18 L	can	9
Grease	"	"	2
'Best' (?)		L	18
Insulator Oil		L	18
(Paints)		\$	0.4
Coaltar		Kg	3,000
Creosote		Kg	242
Sulphuric Acid		Kg	
(Rubber Products)			
Automobile Tire			2
Rubbers Sack		20	37
(Wire Products)			
Nail	1.5 inches	Kg	15
"	4.5 "	"	75
Wire	No.6	"	110
"	No.12	"	53
Sealing Copper Wire	No.14	Roll	2
Wire		Kg	7
(Old Gold Production)			
Arrester	66KV		2
LS (2 insulators missing)	25KV/400A	set	3
C/T.	22KV		1
OCB	33KV/100		1
Oil Circuit breaker			
Marble Switch board (bottom)			1
O/C.B. Hanger	33KV		1
LS	22KV/400A	set	3
Manometer			8
O.C.B. Hanger	33K		
"			1
Conductor Finger	22KV		1
O.C.B. Hanger		set	1
Oil circuit Breaker	66KV	"	1
"	(no insulator)		2
CT Tank			2
CT Transformer Bushing			2
CT Bushing		set	2
CT Tank			1
Recorder	33KV		1
Transformer Bushing	22KV		1
Miniature Bushing	22KV		2
CT Tank	66KV (for insulator)		2
CT Bushing	22KV		2
"	22KV		2
CT	5/5A		2
Zero Phase CT	3300/400A		3
D.S.	33K/400A		1
Manometer	22KV		3
Choking Coil	22KV		1
OCB Operating Pole	66KV		2
CT Tank	66KV (insulator type)		1
O.C.B. Conductor Pole			2
Marble Switchboard	Upper &Lower		2
"	"		1
O.C.B. Operating Pole	22KV		
O.C.B. Elevator Metal fitting		set	1
PTCF Fixture			18
Lighting Conductor Hose	22KV		4

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantitys</u>
			<u>31 October</u>
OCB Hanger	33KV		1
Drum Coil			40
CT Bushing	22KV		2
PT	33 110/50		6
Oil Circuit Breaker			
Hanger	69KV/400A		1
P.S.	11KV/200A		2
Choking Coil	22KV		3
" (no insulator)	66KV		5
Choking Coil Insulator			2
Transformer Bushing	22KV		2
LS	22KV/200A	set	1
OCB Three-Pipe Stand	33KV		1
Choking Coil	22K	set	1
O.C.B. Operating Pole	22KV		3
Choking Coil Insulator	400A		8
LS Insulator	22KV		3
O.C.B. Three Phase	33KV/100A		1
Choking Coil (no insu.)	200A		3
Conductor Finger			5
Transformer Bushing	small type 33KV		4
Cork	large		3
"	small		5
Locknut	1 1/2 inches		2
"	1 inch		2
"	3/4 inches		15
Choking Coil			
(With Insulator)	400A		3
"	66KV		3
Hook Pole	2 m		2
"	1.7 m		2
Base Bolt	6 inches		20
"	10 inches		2
V Bolt	3/10 inches		11
V Clevis			6
LS Revolving Metal			
Fitting	large		9
"	small		18
Pipe Contactor			1
Cup Ring	2/8x2 "		2
Switchboard			1
Hinge Base			12
Socket Re-fuser	1 1/4x 1 1/2		24
Bolt	3/4x10 inches		4
"	5/8x10 "		4
"	5/8x6 "		9
"	1/2x4 "		23
Lock Nut	1 1/2 "		2
"	1 inches		9
"	1 1/4 "		9
Strain Bushing			130
'Flower' Turbine			505
Switchboard metal Pipe			124
Coil			2
PT	3300/110		3
CT	5/50		3
Switchboard Control			
Metal Fitting			225
Bolt	5/8x1.5 inches		825
"	1/2x1.5 "		326
"	1/2x5.5 "		320
High Voltage In- sulating Porcelain			
Bushing			163
Hinge Base	22KV		4
Lock Nut			4
Disconnecter Stand			1

<u>Article</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 October</u>
Hinge Base	22KV		4
Lock Nut			4
Disconnector Stand			1
OCB Stand			10
OCB Handle Switch			5
Normal Bender	1/8x1 1/2		5
Telephone Insulator			932
LS Control Metal Fitting			18
Nut	6 'bu'		718
Scrap Cable	2x50	m	3
"	4x5.5	m	36
"	2x7/10	m	35
"	4x5.5	m	30
"	3x5.5	m	70
"	2x5.5	m	64
"	3x14	m	52
"	4x5.5	m	80
"	4x5.5	m	30
"	4x7/0.6	m	541
Strain Insulator			1
Mouthpiece (?)			6
Reactor			7
Oil Distributing Cork	1 1/2		3
Pulmotor Bushing			2
Oil Gauge			9
Oil Distributing Cork			7
Trunk Line Insulator			18
PT Fuse Stand			
Current Limiting			1
Resistor (with insulator)			1
Instrument transformer			2
Potential transformer			
Disconnector Control			2
metal Fitting			1
OCB Controller			3
Switches in Sections	66/200A		1
Switches in Sections	100A		1
Finger arrester			1
" Magnetic Stand			1
Voltmeter	50A		2
"	5A		1
"	80A		1
"	75A		1
Ground Relay			2
OCB Bushing	33KV		1
Cutting Bushing			2
Fuse Magnetic Stand			
OCB Insulating Porcelain			2
Bushing	Pinned		
Conductor Fuse	5A		6
"	20A		8
Gauge Deflector	5/5A		2
Coil			1
Power Factor			
Switchboard Pilot			1
cutting Machine		set	4
Deflector	20/5 210/5		3
Manometer			7
OCB Operator	27KV		1
DS Fuse	66KV		2
Arc Control Machine			1
Conductor Finger			1
Drum Coil			2

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u>
			<u>31 October</u>
OCB Operating Handle		set	1
OCB Operating Pole			1
Arc Control Machine			2
Sand drum Coil			1
DS Fuse			4
"			5
Power-Factor Meter	110/5A	110/5A	3
"	1000V		1
KW Meter	32/110		3
<del>XXXXXX</del> "	1000V		1
Ground Relay			1
Resistor			4
Gas Bender			1
PP Tube-type Fuse			5
Oil Cork			3
Oil Gauge			2
Coil			1
Voltameter	50A		3
"	80A		1
Carbon Resistor			3
Manometer			6
Ground Relay			1
Overload Relay	out of order		2
Ground Relay	"		1
OCB Insulating			
Porcelain Bushing			1
Choking Coil	"		1
OCB Oil Cork Pipe			3
OCB Signal Light Bulb			1
OCB Oil Gauge			3
Sand drum Coil			7
Conductor Finger			14
Remote Control Dis-			
connectgr	400A		5
Hinge Base			4
Lock Nut			4
Ground Relay			2
Current Limiting Resistor			1
V Shape meter			1
Power-Factor Meter			1
Signal Socket	out of order		2
Switchboard Knob			1
Signal Lens	blue, red		2
DS	400A		3
OCB crane			1
PT Magnetic Stand			6
Coil			3
OCB Insulating			
Porcelain with core			8
Bushing	33K		1
Switchboard Signal			
Light Bulb	blue		2
"	red		12
Socket			5
Magnetic Stand	small type		7
Engrossed Fuse	20w		29
"	30A		17
"	75A		18
"	5A		30
Oil Gauge			1
Switch Handle			2
Clamp for Iron tower			49
Pipe Connecting			
Metal Fitting			30

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 October</u>
OCB Cut-in Indicator	66KV		1
OCB Operating Pole			2
OCB Pipe			1
Suspension Lamp			23
OCB Operating Pole	66KV		1
LS Insulator			1
OCB Hanger			1
DS Knife			3
DS	200A		2
Receiving Switchboard			1
OCB Hanger			5
PS Fuse	200KV (No Fuse)		3
"	22KV (out of order)		392
Carbon			
Switchboard Assembling			29
Pipe			28
Switchboard Pipe			30
"			12
"			46
"			27
Switchboard Pipe			16
"			18
"			17
"			19
"			53
"			1
LS (out of order)	66KV/400A		2
DS	66KV		3
Deflecting Coil	(with insulator)		1
CT	22KV		2
LS Insulator	1	set	2
Balancing Deflector	Three Phase		
OCB Rolling Metal			2
Fitting	32K		24
PT Magnetic Stand	for double line		4
"	" single line		40
PT Fuse	1A		8
"	0.5A		29
"	75		26
PT Fuse			
Switchboard Indicating			6
Lamp	red		40
"	blue		7
Oil Gauge			2
OCB Bushing	33KV		
LS	22KV/200A	set 1 insulator missing	3
LS	22K/200A	"	3
OCB Hanger	33K		1
DS Pole	1300 m/m		6
DS Control Pole			6
OCB Bushing	33K		11
Balancing Deflector			5
D.I. 'Sedo'	33KV/100A		8
OCB Switchboard	33KV/100A		1
Oiling circuit breaker			4
Parts with Handle			1
LS	22KV/400A	set	
Lightning Arrestor			2
board	22KV		3
LS	25/400A	"	1
CT	22KV 10/5		1
CT			24
Earth Pipe Pole			7
OCB Handle Pole			2
CT Bushing	22K		

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u>	<u>31 Oct.</u>
Arc-Suppressing Reactor				
Switchboard			1	
Receiving Switchboard			1	
Switchboard Pipe	2ft.		7	
Inside Receiving Switchboard			1	
Inside Distributing Switchboard			1	
LS Pipe			4	
LS Controlling Handle			2	
Switchboard Pipe	1 1/2 inches 16ft.		1	
"	1 inche 6ft.		1	
"	11/4 inch 9ft.		1	
"	11/2 12 ft.		1	
"	1/2 inch 12ft.		1	
CT	22K 18/5A		1	
LS	22KV/400A		3	
OS Axle			28	
OCB Bushing	33KV		4	
OS insulating Porcelain Bushing	m		30	
Switchboard Handle	60.2		1	
OCB	69KV/400A	out of order	1	
GT Bushing	22KV		2	
CT	22KV		2	
Manometer			3	
Choking Coil	3 lime (with insulator)		1	
OCB Signal Lamp			1	
Transformer Bushing	22K		2	
Conductor Axle	large		6	
OCB Insulator Axle	small		8	
Handle			1	
Copper Sleeve	1/29 m/m		1466	
DS. Insulator			6	
Copper Wire	4/1 m/m		100	
Copper Sleeve	12/35		10	
"	7/2.3		97	
Copper Sleeve	7/2.6		1139	
Iron	4.5		3550	
Copper Sleeve	7/2 6-7/3.5		20	
"	7/29-7/3.5		19	
Iron Sleeve			2350	
Oil Tank			2	
High Voltage Ball Insulator			16	
Trunk Line Insulator			14	
Pole Spike	1/2x16		2170	
Bolt			500	
Arm Pin Axle			838	
Arm Stand	26 inches		58	
Pipe	3 1/2x420 m/m		6	
"	2x3		1	
"	1 1/4x9 large		2	
"	1 x6ft.		1	
"	2x5ft.		3	
"	1/2x12ft.		9	
"	1/2x5		2	
"	1x13		1	
"	1x12		1	
"	1x9		1	
"	1/2x7		8	
"	1 1/2x3		3	
Wire Clevis			68	
U-Clevis			11	

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity 31 Oct.</u>
Washer	5/8		12
Lock Nut	2 inches		36
"	4 inches		26
String Lamp			21
U-Clevis			310
Ring			558
V-Bolt	5 'bu'		202
Marble Switchboard		plate	2
Bus Bar Clamp			123
String Lamp			18
Flot Plate Metal Fitting			20
Top Axle			23
Bis (?)	22K		226
"	66K		10
Cross Metal Fitting			32
Special Clamp			194
Bushing (out of order)	22K		1
String Lamp			240
Washer			64.748
U-Bolt	3 inches		540
Hook			129
Bolt	5/8x10		110
" (With nut)	5/8x23		43
"	3/0x30		21
"	3/0x2		244
Normal Bender			90
Suspending Lamp			1905
PS Metal Fitting (no insulator)			2
"			1
VS Metal Fitting (No insulator)			2
VS Control Iron Stand			1
VS Metal Fitting (no insulator)	66KV/400A		1
String Lamp			1277
Double Clamp			23
8 Shape Ring			100
Wire Clamp			184
"Yogu" (?)			29
Suspension Clamp			226
Cross Metal Fitting			27
Hook			2090
U-Clevis			2848
Topping Axle			1017
Bas8			1380
'Bogu' (?)			60
String Lamp	14 inches		24
V Bolt, large			24
String Lamp	20 "		18
(?) Lamp			55
Bolt, small			50
(?) Turbine			50
Cable	2 core 353	m	540
"	3 core 555	m	70
Scrap Cable	2 core 7/0.8	m	75
"	3 core 7/0.8	m	19
"	2 core 7/1.0	m	12.5
"	3 core	m	3
"	2 core 3.58	m	7
"	2 core 3.58	m	10
Twisted Iron Wire	7/2.0	Kg	16
Scrap Uncoated Copper			
Wire	12 m/m	Kg	128
Transformer Hanger			16
Scrap twisted Copper			
Wire	7/2.6	Kg	131
Uncoated Copper Wire	9 m/m	Kg	186
Transformer Bushing	66KV		2

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 Oct.</u>
Arc Suppressing Reactor	66kv		1
Transformer Bushing	"		2
Reactor O.C/B. Controller			1
PT Bushing	66KV		4
PT	66KV		1
"			1
Transformer	300K		1
OCB	22KV		1
Transformer Bushing	66KV		2
Reactor OCB	5KA		1
VS (4 insulators our of order)	66KV		2
Transformer Bushing			1
Dry Pulp			1
"Busuba" Insulator			580
"	out of order		521
DS Insulator			257
"Biri Insulator			200
"	"		42
Double Insulator	good		604
"	out of order		254
Angle	65x65x2m		400
"	90x90x5.40		90
Pipe	1/8x3.5inch.x20inch		31
Box Angle		\$	5
Switch handles			2
O.C.B.	66K	set	1
Empty Can			100
Transformer			1
Scrap Wire		k	660
Telephone Protecgor			2
Transformer Bushing (Wiring Tools)			2
Sealing			15
Magnetic Stand			6
"High-Pole" Stand			1,300
"Low-Pole" Stand			17
Switch-pole Stand			664
White Bulb			622
No.1 Holder			3,935
One Holder			87
"Hokoku" Holder			764
Concent (?)	20A		249
Ceiling Lamp			152
Safety Switch	10A 125		145
	20A 20		
Fuse Box			74
Bipolar Switch (Edged)	100A		32
"	50A		22
Tripolar Switch (Edged)	300A -100A		2
Bipolar "Kansaki" Switch	30A		1
Indoor Switch			3
Key Socket			0
Chrysanthemun-Shape Socket			20
Magnetic Socket for Placket			5
Mori-pattern Placket			31
Ceiling Placket			1
Chain Placket			3
C-pattern Iron Placket			8
Glove	12 inches		286
"	10 "		10
"	8 "		135

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 Oct.</u>
Moris Cord-shape Socket			15
Lead Glove			1
Handle Glove			5
Iron-Steel Glove			2
PI Setter			15
Metal Setter			52
Anti-aircraft setter			5
Moris Enamelled Setter	No.9		10
"	No.100		4
"	No.140		10
Pneumatic Setter			1
Moris Placket Setter			134
Coach Setter			12
'Nasu' pattern Double Setter			
Coach Holder	10A		1
"	50A		2286
"	75A		867
"	100A		39
"	150A		524
"	250A		0
Filament Fuse	10A		99
"	15A		1
"	25A		2
"	30A		21 1/2
F "	40A	Roll	13 1/2
"	50A	"	11
"	100A		20
Metro-Tungsten	Fuse 0.13A		4 1/2
"	0.2A		600
"	0.3A		900
"	0.4A		1,000
"	0.6A		970
"	1A		1,000
"	1.5A		1,000
"	2A		1,000
"	3A		1,000
"	5A		1,000
Link Fuse	1A		1,000
"	2A		5,160
"	3A		4,800
"	5A		4,950
"	10A		3,069
"	15A		330
"	20A		1,537
"	25A		4,574
"	30A		1,500
"	40A		1,375
"	50A		488
"	75A		2,110
"	100A		0
"	200A		1,850
Plate Fuse	75A	Roll	5,157
Engrossed Fuse	10A		5
Meter Fuse	3 in a case		6
Earth Pole			216
Earth Plate			1,113
Attaching			391
Mould board			330
Wooden Pole	No. 9x1 1/4		60
"	1 inch		4,916
"	No.10x1 3/4		1,660
"	1 1/2		10,224
"	2 inches		5,251
"	2 1/2		4,2210
"	2 1/4		4,059
			4,086

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity 31 Oct.</u>
Cotton Tape		Roll	1
Mica Tapé		"	40
Aluminium Tape		Kg	11500
Antiseptic Tape for (Telegraph Pole Base)		Roll	3
Moris Concent with Washer	10A		130
Embedded Concent (?)	20A		10
"	10A		130
"			1
Embedded Concent Plate			38
"			5
Embedded Concent Plate			5
Moris Hand Lamp			11
Embedded 'Tokuru' plate	3 'Yon'		4
"	2 "		7
"	3 "		5
"	4 "		1
Gangswitch Plate	1 "		30
"	2 "		13
"	3 "		9
Cloak Hanger Concent			5
Rubber Embedding Block			1
Chain Lamp			2
Eyelet set			24
Counter			6
Car (?) Black	6 3/4		13
"	661		7
"	12x1 3/4		2
"	12x1 1/2		65
Moris Pole Lamp Fitting			large 3 small 3
Car(?) Black	8x1 1/2		3
Ceiling Lamp			1
Set Bolt			47
Button Switch			5
'Mogiru' Socket			7
Three-Fold Switch (Iron and Steel tools)			5
Davis (?)	1/8x3/4		13
Pipe Cup	1/2x1		14
"	1/8x3/4		20
Union Cup Ring	1/8x1		16
Pipe Cap	1/8x1 1/2		19
Wager (?) Cup	1/8x1		33
Cup Ring	1/8x1		58
(Knockout' refuser			56
Lock Nut			10
Sharp Bender	1/8x1		9
Union Coupling	1/8x3/4		19
XXXXXX "	1/8x1		19
Lock Nut	1/8x1		56
Normal Bender	1/8x1 1/4		2
Bushing	1/8x1		83
Angle-shape Joint Box			12
C-Shape Log			10
Octagonal			2
C-shape concrete			4
Switch Box	1/16x1 1/2		13
Wager Cup	1/16x 1 1/4		8
Service Elbow	1/16x1 1/5		28
Cup Ring			

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity 31 Oct.</u>
Octagonal			1
'Conjojet' Box			
Octagonal			1
Outlet Box			2
Miniature Lead Box			4
Miniature Joint Box			
(Iron & Steel Tools)			
Luniform Outdoor Lamp			77
Coach Screw			3
Pole Spike			255
Clasp Fitting	6 ft.		0
"	7 ft.		0
"	9.5 "		0
Washer <del>kg</del>	5 "		498
Round Box Cover			3
Nut	5/8		524
Bushing			26
Lock Nut	1/8x1 1/4		60
One-hole saddle	1/8x1		3
Two-hole saddle	1/16x1 1/4		1
Wager Cup	1/8x1 3/4		23
Cup Ring	1/8x1		43
Union Cup Ring	5/8x1/2		19
Cup Ring	1/8x1/2		7
Atabota (?)			38
Sharp Bender	1/8x3/4		3
Bushing	"		38
Sharp Bender	1/8x1/2		27
Normal Bender	1/8x1/12		9
Lock Nut	1/8x3/4		62
Atabota (?)	1/8x1/2		76
Lock Nut	1/8x1/2		90
Bushing	1/8x3/4		1
Bolt	5/8x13ft.		2
"	14ft		1
"	15ft		17
"	16ft		2
"	18ft		1
"	20ft		2
"	40ft		101
"	3/4x24ft		12
Arm stand	50ft		29
"	24ft		1
"	26ft		5
"	30ft		70
"	31ft		1
"	33ft		2
"	36ft		4
"	48ft		3
"	40ft		11
"	41ft		0
Y-Shape Arm Stand			100
Two-hole Strap	7ft		6953
"	9ft		100
"	11ft		11
Three hole strap	12 "		2
"	14 "		505
Five-hole strap	25 "		6
"	36 "		147
Bolt	1/2x15 Z		2
"	4 "		1040
"	4.5 "		1617
"	5 "		99
"	6 "		19
"	7 "		309
"	8 "		147
"	9 "		0
"	10 "		24

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity 31 Oct.</u>
Bolt	11ft		4
"	12 "		12
"	13 "		1
"	16 "		51
"	3/4x2ft		61
"	5/8x1.5ft		11
"	4 "		203
"	45 "		34
"	5 "		110
"	5.5 "		45
"	5/8x6"		1064
"	7 "		282
"	8 "		270
"	9 "		97
"	10 "		191
"	11 "		11
"	12 "		4
			40
Round Joint Box			33
Switch Box			
Octagonal			27
Medium-size concrete Box			
Octagonal			4
Miniature-size concrete box			12
Switch Box			
Octagonal			5
Medium-size concrete box cover			19
Medium-size outlet box	1/10x5 1/8		117
Cup Ring	1/10x3 1/4		149
"	1/10x3 1/4		69
Wager Cup	1/10x3 1/4		
Lock Nut	1/14x1 1/2		10
Service Cup	1/10x5 1/8		23
Wager Cup	1/11x5 1/8		30
Normal Bender	1/10x5 1/8		19
Round outlet Box cover	1/10x3 1/4		21
Sharp Bender	1/10x3 1/4		48
Normal Bender	1/10x3 1/4		64
Lock Nut	1/11x5 1/8		129
Union Cup Ring	1/10x 1 1/4		3
C-Shape Davis	1/10x5 1/8		2
Normal Bender	1/10x1 1/4		1
Lock Nut	1/10x5 1/8		42
Bushing	1/16x1 1/4		9
Service Log	1/10x1		10
Bushing	1/10x3 1/4		9
Sharp Bender	1/10x5 1/8		57
Cup Ring	1/10x1		167
Wager Cup	1/10x1		6
Cup Ring	1/10x1 1/2		31
Lock Nut	1/10x3 1/4		178
Bushing	1/10x1 1/4		35
Lock Nut	1/10x1		81
Normal Bender	1/10x1		44
C-Shape Log	1/10x1		11
Union Cup Ring	1/16x1		11
C-Shape Cross	1/16x1		5
"	1/16x3 1/4		10
(Old Idle Materials)			
Bolt	1/2x4		10,000
"	5/8x4		500
"	5/8x6		50
Twahole strap	2x7x $\frac{1}{2}$		1,500
"	2x7		30,000
Five-hole strap			300
Normal Bender	1/10x5 1/8		40
"	1/10x3 1/4		30

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u>
			<u>31 Oct.</u>
Cup Ring	1/16x5/8		400
"	1/10x3/4		300
"	1/10x1		100
Sharp Bender	1/16x5/8		50
"	1/16x3/4		50
Lock Nut	1/10x5/8		200
"	1/10x3/4		0
"	1/16x1		200
"	1/8x3/4		200
Bushing	1/18x1 1/4		30
"	1/8x1		0
Knockout Refuser			400
Wager Cup	1/10x5/8		50
B-Shape Sleeve	3.2 m/m		100
S-Shape Sleeve	1.6 m/m		100
"	2.0 m/m		100
Octagonal Outlet Box	Medium size		35
'Nokel' Refuser			50
Nichrome Wire			9541
High Pole Stand			49600
Low Pole Stand			30600
Switch Pole Stand			500
Automatic Bulb			174000
No.1 'Sedo' Holder			13000
'Hökoku' Holder			200
Metro-Tungsten Fuse	G 13		19000
"	0.2		9000
"	0.3		9000
"	0.4		9000
"	0.6		9000
"	1A		2000
"	1.5A		2000
"	2A		2000
"	3A		2000
"	5A		2000
Fuse Box			2000
Low-Voltage Petticoat Insulator			1710
Flanged Insulator Tube	3/8x6		12500
"	1/2x1		3500
"	1/2x6		17000
"	5/8x1		1000
"	5/8x7		50
"	5/8x15		50
"	2/8x7		1000

## (6) Division of Duties

- (a) Staff Organization and Service Regulations Division of Duties.
- (1) Matters concerning Counter plans for Demand and Supply of Labor.
  - (2) Matters concerning labor administration and Labor Discipline.
  - (3) Matters concerning calculation of wages.
  - (4) Matters concerning calculation of bonuses

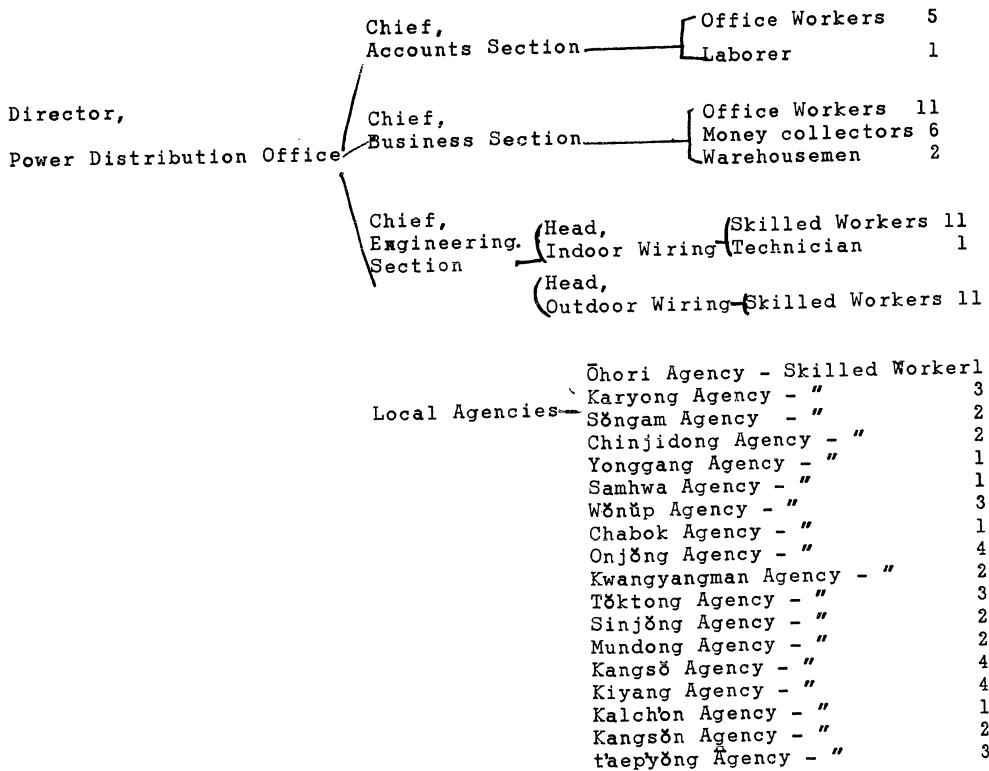
- (5) Matters concerning Social Insurance
- (6) Matters concerning Collection of Labor Statistics
- (7) Matters concerning Personnel Administration
- (8) Matters concerning Accurate Accounts of Travel Expenses of Office employees.
- (9) Matters concerning keeping of Secret of Personnel, etc.
- (10) Matters concerning collection of Personnel Statistics.
- (11) Matters concerning Executive Training
- (12) Matters concerning Reception and Despatch of Documents.
- (13) Matters concerning keeping of Official Seals
- (14) Matters concerning Management of Apartments and Government Buildings.
- (15) Matters concerning Laws and Books
- (16) Matters concerning Purchase, Distribution, and Control of Welfare Commodities.
- (17) Matters concerning welfare Facilities for Employees
- (18) Matters concerning Health, Comfort, and aid of employees.
- (19) Matters concerning Welfare and Cultural Works.
- (20) Matters concerning Apartments and Government Buildings
- (21) Matters concerning Construction and Repair of Apartments and Government Buildings
- (22) Matters concerning Adjustment and Custody of Supplies.
- (23) Matters concerning Composition and Execution of Budget.
- (24) Matters concerning Settlement of Annual, Quarterly, and Monthly Accounts.
- (25) Matters concerning Adjustment and Preservation of Account Books.
- (26) Matters concerning Cost Accounting
- (27) Matters concerning Amortization
- (28) Matters concerning Custody of Property.
- (29) Matters concerning Establishment of Annual and Quarterly Fund Plans.
- (30) Matters concerning Sundry Taxes, Loans, and Debts.

- (31) Matters concerning Adjustment and Preservation of Vouchers and Account Books.
- (32) Matters concerning Accommodation and Operation of Funds.
- (33) Matters concerning Receipts, Disbursements, and Custody of Cash and Securities.
- (34) Matters concerning Payment of Salaries and Allowances.
- (35) Matters not Falling under Other Sections.

Business Section:

- (1) Matters concerning Establishment and Execution of Operation Plans.
- (2) Matters concerning Composition of Budget of Business Receipts.
- (3) Matters concerning Settlement of Business Receipts.
- (4) Matters concerning Sales of Electric Bulbs.
- (5) Matters concerning Regulation and Operation of Power Supply.
- (6) Matters concerning Inspection of Business
- (7) Matters concerning Compilation of Business Statistics and Business Reports.
- (8) Matters concerning Establishment of Counter plans for Prevention of Wasteful Use.
- (9) Matters concerning Calculation and Assessment of Power Rates.
- (10) Matters concerning Investigation of Tendency and Real Condition of Power Consumption.
- (11) Matters concerning Adjustment of Supply Areas.
- (12) Matters concerning Adjustment and Collection of Power Rates and Other Receipts.

## Staff Organization:



## B. Order System.

All orders came from the Power Control Bureau, Ministry of Industry, to the Power Distributing Department, Pyöngan-namdo, then these orders were relayed by the same Department to the Chinnamp'o Power Distributing Office. Generally speaking, the Communist leaders put more energy into the political phase rather than the industrial phase. Thus, in order to infiltrate Communism among the ranks of employees, they organized Labor Party cells in all factories, where the cell chairman executed the orders transmitted by the Chinnamp'o City Chapter of the Labor Party. So non-Party members had not a particle of authority in all workshops, including power distributing agencies, where only the party bosses act like puppet players.

## (3) Attendant Undertaking

## D. Attendant Property

## a. Land

Name of Power Plant	Transformer Substation	Employees Office	Dormitory Homes	Water-way	Reservoir Annex	Remarks
Pyöng	Pyöng					in City
899	1589.25					outside
620						the City
						(Agency)

## a. Buildings

Kind Particulars	Power Plant	Transf. Subst.	Employees Home	Dormitory	Ware-house	Office Annex	Other	Remarks
Story			One & two storied		One Stored		One & two storied	One Emp. home 1 Off. bldg. 2 storied
Floor	in city		390.07		194.5 "		76.75	included
Area	Agency		Pyöng				143.00	
Roof			Tile-roof		Tile-roof		Tile-roof	

Power Distributing Equipment (Destroyed)

Transformer Substation	Lines	Section	Length	Extension	Number of Supporting Poles	No. of Pole-TV	Remarks
No.1 Substatin	Trunk Line	40-49	380m	4560m	10	12	
" No.2	Connecting "	7-17	400m	1200m	10	6	
"	Station Line	1-14	560m	1680m	14	3	
"	Flour Mill Line	1-12	480m	1440m	3	3	
"	Custom house L.	2-11	360m	1080m	1	4	
"	New Inspection Line	37-38	70m	210m	1	-	
Kihwa Subst.	Common Power Line	5-12	315m	1890m	2	4	
"	Old trunk Line	3-10	315m	945m	1	2	
			2880m	13005m	47	34	

### Balance Sheet

31 August 1950  
Power Distributing Dept.  
Pyongan-namdo)

### Debit

### Credit

<u>Items</u>	<u>Amount</u>	<u>Items</u>	<u>Amount</u>
(Fixed Assets)	(Capital)		
Power Transmission Equipment	9,707,048.13	Fixed Fund	26,460,409.25
" "	6,330,008.97	Floating Fund	3,678,000.00
" Distributing Equipment	10,366,492.13	Amortization Reserve	1,009,573.15
Vehicles & Carts	313,312.82	Bonus Reserve	136,042.21
Working tools & Supplies	195,393.90	Welfare Outfit Reserve	804,521.41
Employees' Homes	815,092.10	(Liabilities)	
Welfare & Cultural Outfit	12,271.10	Accounts Payable	45,000.00
		Unpaid Debts	7,703.40
(Floating Assets)			
Stores	8,438,763.57	Advance Receipts	2,298,852.85
Goods to arrive	732,534.93	Money in Custody	765,823.95
Deposit	9,797,415.01	Unpaid Accounts	905,568.85
Cash	131,580.11	Temporary Receipts	2,334,799.80
(Claims)		Advance Receipts for	
Accounts Receivable	12,936,804.56	Contract works	3,514,252.96
Unsettled Claims	2,040,599.04	(Special Debts)	
Advance Payments	639,285.20	Legal Deduction from	
Guarantee Money	150,124.00	unpaid Profit	291,036.95
Temporary Loans	331,891.38	Unpaid-in Floating Fund	15,302,516.22
Uncollected Money	3,187,738.67		
Temporary Payments	867,108.07	Debts for Goods in custody	5,552.37
		(Internal Account)	
Advances for Contract Works	1,797,939.87	Adjustment of Estimated	
Control Bureau Accounts	6,352,023.59	Accounts	280,414.00
(Special Property)		(Profit)	
Advance Payment Transaction Tax	150,000.00	Profit brought forward from Previous Period	16,064.115.11
Legal Deduction from Profit of Previous Period	332,012.60	(Internal Account)	
Goods in Custody	5,552.37	Head Office & Agencies Accounts	4,877,868.70
(Internal Account)		(Profit)	
Head Office & Agencies Accounts	110,222.94	Profit of Current period	7,429,956.70
Welfare Loans		Head Office & Agencies Account	4,877,868.70
Investment in Welfare Outfit	619,280.08	Profit	7,429,956.70
Construction Balance Account	1,172,057.18	(Profit of Current Period)	
(Loss)			
Loss brought forward from Previous Period	8,674,455.03		
Loss of Current Period			
Total	86,207,007.35		86,207,007.35

From 1 July to 31 August 1950  
 Power Distributing Dept,  
 Pyongan-namdo

Statement of Profit and Loss

<u>Disbursements of</u>		<u>Receipts</u>	
<u>Items</u>	<u>Amount</u>	<u>Items</u>	<u>Amount</u>
General Expenses of Power Distribution	1,547,830.27	Electric Light Rates	5,778,119.92
Repairs of Power Distribution	562,441.52	Electric Power Rates	8,137,646.70
Adjustment of Power Rates	4,000,000.00	Electric Heat Rates	880,508.00
Transaction Tax	796,596.35	Special Power Rates	919,412.09
Deduction from Profit	1,731,916.15	Additional Power Rates	151,193.95
Fine	438.20	Sundry Profit from Supplies	186,735.00
Investigating Expenses for wasteful use	29,619.48	Interestion Receipts	41,500.00
Profit of Current Period	7,429,956.17	Miscellaneous Profit	1.65
Total	16,098,798.24	Profit from Property Sales	3,680.13
		Total	16,098,798.24

10

Actual Condition

of

The Kangsø Electric Machine Shop

Board of Maintenance  
Kangso Electric Machine Shop  
CHO Tae-gwan, Chairman  
KIM Ch'ang-chip, Paymaster.  
YI Yong-ki, Operation Chief.

Balance Sheet

As of 30 June 1950

<u>Items</u>	<u>Amount</u>	<u>Items</u>	<u>Amount</u>
(Fixed Assets)	1,268,689,800.01	Capital	223,896,662.84
Operational Fixed Assets	126,868,980.01	Capital	223,896,662.84
Factory Lot Chief Mine-levels	1,264,884.60	Fixed Fund	127,096,662.84
Factory Buildings	57,266,446.57	Floating Fund	96,800,000.00
Apartments	18,887,952.00	Reserve	3,689,780.24
Welfare Facilities	482,511.15	Profit Reserve	
Structures	13,670,047.07	Reserve for Amortization	3,594,080.24
Tracks Machine Apparatus	30,002,001.48	Managers Fund Account	
Transportation Ways ships	315,679.36	Reserve ofc Fund	95,700.00
Vehicles	334,284.75	Welfare Outfit Fund	
Tools & Equipment	4,645,193.03	Loans Payable	15,026,000.00
Spare Machines		Bond Loans	3,300,000.00
Idle Fixed Assets		Short-term Loans	11,726,000.00
Property for Redemption		(Liabilities)	99,033,730.23
Internal Construction	2,837,536.95	Debt on Purchase	37,278,443.79
Construction & Expansion	2,379,042.75	Debts of After payment	26,158,352.77
Repairs		Unpaid Debt	11,120,091.02
Stores		Sport-term Debts	19,613,255.35
Special Deposit for Legal Amortization	1,458,494.00	Advance	8,724,286.47
(Floating Assets)	137,561,849.76	Money in Custody	338,481.85
Material Property	42,946,258.47	Unpaid Accounts	
Raw Materials	19,753,787.01	unpaid Expenses	
Fuel	6,992,121.37	Advance Collection	
Packing Materials	15,362,301.64	temporary Receipts	3,909,422.78
Sundry Stores	22,567,441.03	Control Bureau	
Unfinished Goods	16,083,453.70	account	38,192,813.67
Half-finished Goods	43,767,416.03	Compensation Money	40,294.64
Circulating Property	39,794,205.37	Special Debt Unpaid	16,509,012.89
Finished Goods	577,417.02	money for Amortization	
Bad Products		Unpaid Transaction Tax	1,369,950.48
By-Products		Unpaid Deduction from	
Operation Fragments	896,780.91	Profit	1,277,891.45
Bungles	818,753.48	Unpaid Surplus Profit	597,380.00
Goods for shipment	1,680,259.25	Advance Receipts from	
Currency Property	848,175.26	Bond	2,261,497.35
Bank Deposits	837,330.10	Unpaid Floating Fund	5,500,293.61
Cash	10,845.16	Debts on goods in	
Claims	74,927,892.41	cgstody	2,000.00
Claim by Sales	61,430,568.99	Internal Accounts	7,940,967.54
Claim by Exchange	39,261,111.53	Head Office & Agencies	
Uncollected Claims	22,169,457.46	Accounts Construction	
Sport term Claims	12,490,948.89	Balance Account Adjust-	
Letters of Credit		ment of Estimated	
Issued Profit of Previous Period	6,131,776.70	Accounts	7,940,967.54
Guaranty-Money	1,210,292.70	Profits	14,926,230.59
Accommodation-money	4,262,479.21	Profit brought forward	
Accounts Receivable	187,388.04	from Previous Period	14,926,230.59
Prepaid Expenses	699,012.24	Profit of Current Period	
Uncollected Profit temporary payments	1,006,374.53		
control bureau account			
Special Property	24,727,937.16		
Advanced Transaction	396,310.00		
Tax			

<u>Items</u>	<u>Amount</u>	<u>Items</u>	<u>Amounts</u>
Advance Deduction from Profit	2,456,540.62		
Adjustment money for Uncollected Price	850,179.69		
Uncollected Floating Fund	21,024,906.85		
Goods in Custody			
Internal Account	2,030,170.57		
Head Office & Agencies Accounts			
Welfare Outfit Account			
Welfare Accommodation Fund	1,896,653.79		
Investment for Welfare Outfit Fund			
Construction balance	133,516.78		
Loss	12,068,017.47		
Loss brought forward from previous period			
Loss of Current period	12,068,017.47		
Total	381,022,384.33	Total	381,022,384.33
Idle special property		Special Fund	
Idle Raw Materials			
Idle Stores			
Idle Finished goods			
Special claims			
Deposit			
Total		Total	
Basic Holding of Floating property		Holding of Raw materials	
Raw Materials & Stores		Estimated Fund for Basic Construction	
Unfinished & Half-Finished goods		Aggregate of Delivered Amounts for Basic Construction	
Finished Goods currency Property		Estimated Amount for Amortization	
		Aggregate of Amortization	

Board of Maintenance  
Kangso Electric Machine  
Shop.

Statement of Profit and Loss  
(From 1 April to 30 June 1950) CHO Tae-gwan, chairman.  
KIM Ch'ang-chip, Paymaster  
YI Yong-ki, operation  
chief.

<u>Kind</u>	<u>Loss</u>	<u>Amount</u>	<u>Profit</u>	<u>Amount</u>
Profit & Loss Unfinished Goods in Production brought forward from Previous Period	22,068,991.87		All Production Cost in Plan	103,631,680.95
Raw Material cost	120,946,147.79		Half Finished Goods Bad Products	
Labor cost	6,630,850.07		By-Products	Operation Fragments
Expenditure	4,366,409.20		Bungles	
Amortization cost	6,896,000.00		Unfinished Goods by End of Period	42,028,294.01
Indirect Cost in control & Sales			Deductgion	589,985.02
Total (Production Profit)	160,898,398.93		Production Loss	14,643,428.45

Profit & Loss Sales Cost in in Sales plan	56,409,386.46	Receipt from Sales 70,297,091.20 Finished Goods
Half Finished goods		Half Finished goods.
Bad Products		Bad Products
By-Products		By-Products
Operation Frag- ments		Operation Frag- ments
Direct Expenses for Sales		Bungles
Payment for price Adjustment	1,776,087.81	Grant for Price adjustment
Transaction Tax	6,672,126.92	310,495.39
Total (Sales Profit)	5,749,885.72	
Total	70,607,586.91	Total 70,607,586.91

Profit & Loss Deduction from in Undertak- Profit Payment	5,205,678.92	Production Project sales Profit	5,749,985.72
ing of Surplus Pro- fit Bonus		Balance from Esti- mated Allotment	
Bonus		Interest Receivable	299,041.80
Balance from Estimated allo- tment	XX 8,957.89	Damages for Breach of Contract	
Interest payable	XX 748,671.53	Miscellaneous Pro- fit	12.89
Fine	25,619.00		
Damages for Breach of Contract	343,739.06	Undertaking Loss	14,927,123.89
Miscellaneous Losses	19.15		
Production Loss	14,643,428.45		
(Undertaking Profit)			
Total	20,976,164.30	Total	20,971,114.30

<u>Kind</u>	<u>Loss</u>	<u>Amount</u>	<u>Profit</u>	<u>Amount</u>
Appraised Value of Property			Undertaking Profit	
Amount of Pro- perty Sales			Profit in Apprai- sement of Property	2,859,106.42
Loss by Acci- dents			Profit in Sales of Property	
Special Depre- ciation			Loss of Current Period	
Undertaking Loss	14,927,123.89			12,068,017.47
(Profit of current Period)				
Total	14,927,123.89	Total		14,927,123.89

Cash Balance as of 15 November 1950 124,490.67 W8n

The Board of Maintenance,  
Kangso Electric Machine Shop  
  
CHO Tae-gwan, Chairman  
KIM Chang-chip, Treasurer

Specification of Fixed Property

Land

<u>Kind</u>	<u>Area</u>	<u>Particulars</u>
Farm	111,500 m <sup>2</sup>	Building Lot inside Factory Compound
Miscellaneous forms in Lot	431,347.4 m <sup>2</sup>	"
Miscellaneous Land	3,702.60	Building Lot of Apartments outside Factory Compound
"	2,310.00	Building Lot inside Factory Compound
Forestland	7,365.6	Building Lot of Apartments outside Factory Compound
"	55.1	Building Lot inside Factory Compound
Building Lot	51,480	Building Lot of Mess Hall outside Factory Compound
"	6,600	Building Lot inside Factory Compound
Paddy Field	29,700	"
Farm	82,559	Kitchen Garden of Employees outside Factory Compound
"	166,551	Playground outside Factory Compound
"	837,982.6	Building Lot of Apartment outside Factory Compound
Total	1,732,670	

Specification of Fixed Property

## Buildings

<u>Kind</u>	<u>Structure</u>	<u>No. of Hours</u>	<u>Floor Area</u>	<u>Appertaining Field</u>
Miniature Trans- former Factory	Brick Building with Iron Pipe State Roofed	1	Pyöng 1,221	Electric Machine Section, production Dept.
Working Factory	Brick Bldg Slate Roofed	1	133,330	Working Section, Engineering Dept.
Air Compressor Room	"	1	8,509	Working Section Production Dept.
Casting Factory	Brick Bldg with Iron Pipe Slate	1	1,040,227	Casting Section, Production Dept.
Copper Wire Factory	Iron Pipe Slate Roofed	1	1,073,812	"
Insulator Fact.	Wooden Bldg Slate Roofed	1	7,850	Insulator Section, Production Dept.
Varnish Mfg. Fact. Saw Mill	" "	1 1	128,000 18,077	" Working Section, Construction Dept.
Carpenter's Shop	"	1	1,010	"
Empire Cloths Factory	Wooden Bldg, tile Roofed	1	40	Insulator Section Construction Dept.
"	Wooden Bldg, Slate Roofed	1	79	Repair Section, Engineering Dept.
Cen Mft. Factory	Brick Bldg, Tile Roofed	1	110	Working Section, Construction Dept.
Large Transformer Factory	Ferro-concrete, Slate Roofed	1	1,066.500	
Blacksmith's shop	Wooden Bldg, Slate Roofed	1	59.0	Working Section Engineering Dept
Pump Room	Brick Bldg, Tile Roofed	1	18.0	Repair Section "
"	Wooden Bldg, Tile Roofed	1	38.0	"
Mess Boiler Room	Brick Bldg, Tile Roofed	1	38.0	"
Dormitory Boiler Room	"2	1	32.0	
Pump Room	Wooden Bldg, Tile Roofed	1	12.0	Repair Section
Locomotive Shed	Steel Reinforcements	1	23.0	Repair Section, Business Dept.
Toilet		4	20.0	

<u>Kind</u>	<u>Structure</u>	<u>No. of Hours</u>	<u>Floor Area</u>	<u>Appertaining Field</u>
Toilet	Steel Reinforcements	1	3	
Public School toilet		1	24	
Mess Hall Toilet		1	36	
Substation Toilet		1	1.5	
Dormitory "		5	10	
Office Room	Brick Bldg, Tile Roofed	1	311,514	
Junior Party Office	"	1	65.0	
Trade Union "	Wooden Bldg, tile Roofed	1	31.5	
Repair Section Office		1	34.0	
Construction Dept Office		1	61.0	
Shipping Bureau Office		1	30.8	
Land Transportation Bureau Office		1	25.0	
Welfare Bureau Office		1	39.0	
Higher Technici- ans' Training School	Brick Bldg, Tile roofed	1	278.0	
Technicians' Train- ing School	Two Storyed wooden Bldg, Tile roofed	1	258.0	
Office Building Guard box	Wooden Bldg, tile Roofed		6.5	General Affairs Dept.
Guard House	"		34.0	"
Dormitory Toilet	"	2	22.0	"
Office Bldg. "	"	2	2.5	"
Warehouse	"	5	1,000	"
"	"	1	82.5	Building Dept
No. 1 Mess Hall Storeroom	"	13	26	Working Section, Construction Dept.
No. 2. "	"	15	30	General Affairs Dept.
Mess Hall No.1 Storeroom	"	1	36	"
Storeroom	"	1	70	"
"	"	1	10	"
"	"	1	40	Welfare Bureau
Barber shop Storeroom	"	1	7.5	"

<u>Kind</u>	<u>Structure</u>	<u>No. of Hours</u>	<u>Floor Area</u>	<u>Appertaining F.</u>
Public School Warehouse	Wooden Bldg, Tile Roofed	1	44.0	General Affairs Dept.
Oil Warehouse	"	1	25.0	Business Dept
Substation Warehouse	"	1	11.0	Engineering Dept.
No.2 Mess Hall Storeroom	"	1	14.0	General Affairs Dept
No.1 Storeroom	Brick Bldg, Tile Roofed	13	364	"
No.2 "	Wooden Bldg, " "	15	67.5	"
No.3 Storeroom	Wooden Bldg, " "	7	224	"
No.4 "	"	12	648	"
No.5 "	"	12	240	"
No.6 "	Brick Bldg, "	12	264	"
No.7 "	Wooden Bldg, "	36	432.0	"
No.8 "	"	1	83.0	"
No.9 "	"	24	1997.0	"
No.10 "	"	6	252.0	"
No.11 "	"	3	157.5	"
No.12 "	" Slaté Roofed	2	105.0	"
Office Room	Wæoden Bldg, tile roofed	3	115.0	"
"	Ferro-Concrete, tile roofed	10	35.0	"
"	Wooden Bldg, tile roofed	1	750.0	"
"	"	1	30.0	"
Construction Office	"	1	33.0	"
"	"	1	17.5	"
"	"	1	38.0	"
"	"	1	26.0	"
"	Wooden Bldg, Slate roofed	1	15.0	"
"	Wooden bldge, tile roofed	2	48.0	"
Bathroom	"	1	79.4	"
Dormitory	Brick bldg, tile roofed	1	570.0	"
"	Brick bldg, Zinc roofed	1	28.0	"
Bathroom	wooden bldg, tile roofed	1	81.8	Construction Dept
Dormitory	"	1	40.0	General Affairs\$D
Mess Hall	" (two storied)	1	27.6	"

<u>Kind</u>	<u>Structure</u>	<u>No.of Hours</u>	<u>Floor Area</u>	<u>Appertaining F.</u>
People's Youths Hall	Wooden Bldg, tile roofed	1	25.0	General Affairs Dept.
People's Youths Propaganda Hall	" (two storied)	1	258	"
Hospital	"	2	90	"
"	"	1	28	"
Public School	"	1	185.3	"
Public School	"	1	94.2	"
No.1 Barbershop	"	1	27.5	Welfare work Bureau
No.2 Barbershop	Wooden Bldg, Tile roofed	1	4	"
Booth	"	1	44	General Affairs Dept.
Welfare Mess Hall	"	1	16.0	Welfare work Bureau
Welfare Tailor shop	"	1	12.0	General Affairs Dept.
Dormitory Washroom	"	1	60.0	Business Dept
Warehouse Office	"	1	12.0	"
People's Youth Office	"	1	25.0	General Affairs Dept
Substation Office	"	1	81.0	Engineering Dept

## Specification of Fixed Property Structures

<u>Kind</u>	<u>Structure</u>	<u>Type</u>	<u>Extension Area</u>	<u>Use</u>	<u>Appertaining Field</u>
Railroad			10,000 m	Transportation	
Reservoir	Ferro-Concrete Pool		25mx6x1.5m	Water Distribution	
Distributing Reservoir	"		Depth 10 m Diameter 7m	Drinking	Engineering Dept
Settling Basin	"		30mx40mx3m	Sea water Precipitation	
"	"		30mx40mx3m	"	
Telegraph Poles	Wooden Pools		87	Power Distribution inside Factory	"
"	"		110	Power Distribution for Mess Hall	"
"	"		71	Communication Lines	"

<u>Kind</u>	<u>Structure</u>	<u>Type</u>	<u>Extension Area</u>	<u>Use</u>	<u>Appertaining Field</u>
Iron Tower	Wooden Pools			Power distribution for sub-station	Engineering dept
Water works	Iron Pipe		6,700m	Water Supply to factory & Homes	"
Well	Ferro-concrete type	Large Diameter 5m Depth 10m		Factory & Homes "(for waterworks)	"
Well	Ferro-concrete size	medium Diameter 15m Depth 5m	Water supply to Factory homes	Engineering Dept	
Lamp Tube		Perimeter 6m Height 30m	) <sub>5</sub>	Blast furnace	
"		Perimeter 6m Height 35m	) <sub>2</sub>	Reverberatory Furnace	
"		Perimeter 5m Height 25m		Dormitory Insulator Fact.	
Bridge		1			
Air Pipe		one set			
Sewer		5,000m			
Road		5,600m			
Distributing Wire inside Factory	Substation Factories	Overhead Wire	Copper Wsre 2,839m	3.3KV	
Dormitory	"				
Distribut-ing Wsre	Mess Halls	"	" 4,052m	"	
Telephone Wire	Communica-tion line in-side & out-side factory	"	Aluminum Wire 3,105m		

## Specification of Fixed Property Ships

<u>Name</u>	<u>Type</u>	<u>Standard Size</u>	<u>Shipbuilder</u>
Motor 50HP	Propeller	Breadth 3.15m Depth x 1.08m Length x 13.2m	Hiroshima shipyard

## Report of Fixed Property      Engineering section

<u>Name of Machines</u>	<u>Standard Size</u>	<u>Unit</u>	<u>Quantity</u>	<u>Use</u>	<u>Remarks</u>
Lathe	6'		7		
"	8'		7		
"	12'		1		
"	15'		1		
Puppet Lathe	6'		1		
Cutting Machine	6"		1		
Shaving Machine	8"		1		
"Hopping"	24"		1		
Milling Machine	3"		1		
"Puppenn"	6'		1		
Shaver	24"		1		
"	22"		1		
"	18"		1		
Bolban	14"		1		
"	18"		2		
"Padial" Bolban			1		
Electric Motor	20HP		2		
"	15HP		1		
Grinder			2		
Air Compresssr	100HP		1		
Air Hammer	1/4 "		1		
"	1/8 "		1		
"	1 "		1		
Blower			3		
Bolban	25"		1		
Fixed Switch	3x6"		1		

## Power Section

1. Transformer	66/11 KV 19 5,000KVA	2	Reception of electric city	Substation Equipment
2. "	66/3.3 KV 19 2,000 KVA	3	"	
3. "	11/3.3 KV 1,000 KVA	4	Power Distribution inside Factory	
4. Meter-Transformer	69KV 3 \$ VTR-260	1	Installation finished	
5. "	66KV 1 \$ OGL-C	2	"	
6. Oil Switch	69KV SK 280-503	1	"	
7. "	64KV SP-1008	1	"	
8. "	66KV Insulator Type	1	"	
9. "	1.15 KV SKR 268-253	1	"	
10. "	33KV SKR 268-10A	5	"	

<u>Name of Machines</u>	<u>Standard size</u>	<u>Unit</u>	<u>Quantity</u>	<u>Use</u>	<u>Remarks</u>
11. Meter transformer	69KV 49-260		4	Installation finished	One spare stock
12. Meter-transformer	69KV 6 W-L		2	"	"
13. Meter-transformer	66KV T 134MT-8		1	"	One spare stock (needs repair)
14. Mercury-Vaper Rectifier	H38-0-20 200P		1	"	for Storage Battery
15. Storage Battery			54	"	for Power Source
16. 66KV Power Receiver			1	"	
17. 3.3KV Switchboard			1	"	
18. 11KV Switchboard			1	"	
19. 3.3KV Switchboard			5	"	
20. Transformer	3.3/22KV 50 KVA		2	"	Substation Equipment
21. "	3.3/22KV 20 KVA		2	"	"
22. Telephone Switchboard	Magnetic type		1		for Switchboard room one office rooms.
23. Telephone Set	Table telephone		15	"	"
24. "	Wall fixture		9	"	"
25. Transformer	3.314/2200 75 KVA		4	"	for Factory power and Lighting
26. "	11KVA		3	"	"
27. "	15KVA		2	"	"
28. "	20KVA		4	"	"
29. "	30KVA		6	"	"
30. "	40KVA		2	"	"
31. "	50KVA		13	"	"
32. "	75KVA		2	"	"
33. "	100KVA		1	"	"
34. "	300KVA		2	"	"
35. "	3.3KV/200-110 25KVA		2	"	for Employees Homes & Pump Rooms
36. "	10KVA		11	"	"
37. "	15KVA		7	"	"
38. "	22KVA		7	"	"

<u>Name of Machines</u>	<u>Standard size</u>	<u>Unit</u>	<u>Quantity</u>	<u>Use</u>	<u>Remarks</u>
39. Transformer	3.3KVx220-110V 30 KVA		4	Installation finished	for Employees homes & pump rooms
40. "	50 KVA		1	"	"
41. "	100 KVA		1	"	"
42. "	150 KVA		1	"	"

## Report of Fixed Property Casting Section

'Padial' Bolban Electric Motor	10HP	1
"	70HP	5
"	30HP	1
"	15HP	2
Bolban Blower	30HP	1
Crusher	'Hupet' type	3
Drying Oven		1
Welding Machine		4
Crane	25 \$	1
"	5 "	1
Electric Furnace	3 "	3
Reverberatory Furhace	2 "	1
Drying Oven	Miniature type	2
Cupola	"	2

## Report of Fixed Property Tools Section

Table Bolban	Miniature type	3
Power Press	30 \$	3
Hand Press		7
"Bullchange" Press		2
Notching Press		10
Iron Plate cutter	6 \$	1
"	3 "	1
Milling Machine		3
Marble cutter		16
" Grider		2
Welding Machine		1
Electric Motor	30HP	4
"	25HP	1
"	10HP	8

Report of Fixed Property

## Electric Machines Section

<u>Name of Machine</u>	<u>Standard size</u>	<u>Unit</u>	<u>Quantity</u>	<u>Use</u>	<u>Remarks</u>
Oil Press	500 \$		1		
Electric Motor	5 HP		5		
"	3 HP		1		
"	10 HP		2		
"	20 HP		3		
Shaving Bolban			1		
"Padial" Bolban			1		
Iron Plate Cutter	6'		1		
Notching Press	38"		5		
Front Bolban	6'		2		
Lathe	6'		1		
Press			2		
Blower			1		
Grinder			1		
Power Press			3		
Rotary Cutter of Iron Plate			1		
Varnish Painting Tank			1		
Welding Machine			1		
Crane	50 \$		1		
"	30 "		1		for installing electric motors

Report of Fixed Property

## Engineering Section

Lathe	6'	4	Installation completed
Bolban		1	"
Shaver	12"	1	"
Iron Plate Cutter		1	"
Steam Boiler	6x30	1	"
"	43 \$	1	"
"	Tobacco Pipe type	1	"
"	Asahi type	1	"
Water Pump	6" 20 KW	2	"
"	15 HP	2	"
"	10 HP	2	"
Water Pump	15 HP	1	"
"	25 HP	1	"
"	30 HP	1	"
"	15 HP	1	"
"	10 HP	1	"
"	7.5HP	1	"
"	10 HP	1	"
"	20 HP	1	"
"	2 HP	1	"
"	3 HP	1	"
Electric Motor	5 HP	1	"
Turbine Pump	25 HP	1	"
Blower	15 HP	1	"
"	W HP	1	"
"	7.5 HP	1	"
Electric Motor	20 HP	1	"
"	10 HP	1	"
Welding Machine	Electricity	1	"
"	Oxygen	1	"
Lathe	12'	1	"
"	5'	1	"

<u>Name of Machine</u>	<u>Standard size</u>	<u>Unit</u>	<u>Quantity</u>	<u>Use</u>	<u>Remarks</u>
Electric Hammer			1	Installation completed	
Gränder			1	"	
Vacuum Pump			1	"	
Varnish Making Machine		set	1	"	
Sawing Machine			1	"	
Planning Machine			1	"	
Boring machine for lumbering			1	"	
Nail making machine 4"			1	"	

Report of Fixed Property

## Electric Section

Low Voltage Distri-	2500/150A		2	Installation completed	
buting Electrode			2	"	
Electric Motor	10 HP		1	"	
"	5 HP		4	"	
"	20 HP		1	"	
"	30 HP		1	"	
Vacuum Pump			1	"	
Tank			2	"	
Transformer coiling machine			1	"	
Iron Core Compressor			2	"	
Power Press	30 "		6	"	
Hupington Press			2	"	
Iron Plate Cutter	6"		1	"	
"	3"		4	"	
Cregne	3 \$		2	"	for installing electric motor
Bolban			2	"	
Welding Machine	Electric		3	"	
Blade Grinder			2	"	
Shaver			6	"	
Lathe	12'		1	"	
Lathe	8'		2	"	
"	6'		9	"	

Report of Fixed Property

## Rolling Section

Electric Motor	500 HP		2	for crudely finished rolling	
Power Switchboard			2	500 HP	
Starting Control	3.3/200A	set	2	"	
Oil Breaker			2	"	
Single Phase-transformer	3.3/105.250A		1	OCB Control	
Electric Motor for Oil Pump	5 HP		1	Oil Transportation	
Decelerator	2:1		1	for crude rolling	
Flashing Wheel			1	"	
Cambers			1	"	
Rolling machine	350"		1	"	
"	80"		1	"	
Cambers	80"		1	for Finished rolling	
Charging machine 'Pako' type			1	for Heating Furnace	
Electrid Motor	50HP		1	"	
Resistor		set	1	"	
Heating Furnace Series type			1		
Blower	5 HP		1		
Windlass of finished goods			2		

<u>Name of Machine</u>	<u>Standard size</u>	<u>Unit</u>	<u>Quantity</u>	<u>Use</u>	<u>Remarks</u>
Thin Plate Roller	400 #/	set	1	for rolling thin plates	
Reduction Gear	100 HP		1	"	
Electric Motor	100 HP		1	"	
Resistor		set	1	"	
Heating Furnace	Intermittent system		1	"	
Blower			1	"	
Hot Searing machine			1		
Electric Motor	30 HP		1	for cutting machine being used	
Roller		drum	29		
Electric Motor	30 HP		6	"	
Decelerator			6	"	
Distributor			6	"	
Roller	for horizontal rolling		10	"	
Switch			10	"	
Electric Motor	30 HP		7	"	
"	40 HP		1	"	
"	20 HP		1	"	
Decelerator			1	"	
Outgoing machine			1	"	
Electric Motor	5 HP		1	"	
Crane	10 #		1	"	Equipping Electric motor
"	3 "		7	"	
Telephone Set			1	"	
Blower			1	"	

Report of Fixed Property      Inspection Section

Field Regulator	medium type		2	being used
Distributor	3.5/50A		2	"
Meter-transformer	40VA 3.3/110		7	"
"	35 100/5A		2	"
Single phase conductor Voltage Regulator	25 KVA		3	"
Test Desk	for Law Voltage	set	7	"
Electromagnetic switch	220 P			
"	60 A		4	"
"	100A		6	"
Storage Battery	200V			
"	100 Kg		20	"
"	150 "		1	"
Automatic Conductor Voltage Regulator	40 KVA		1	"
Changeover Dis-connecting Switch	3.3/150A		1	A
Switchboard	for Low Voltage	set	1	unusable
Electric Motor	30 HP		3	being used
"	15 HP		1	"
Distributor	200V 150A		2	"
Direct current motor	9 KVA		3	"
Insulator	60 KVA		12	"
Oil Test Machine	5 KVA 250 KV		1	"

Transformer for "Test Transformer "	650 / 267V 10 KVA 30 KVA 3 KVA 4 KVA	3      being used 1      " 1      " 1      "
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## Report of Fixed Property (Meters) 14 November 1950

<u>No.</u>	<u>Articles</u>	<u>Type</u>	<u>Measurement</u>	<u>Direct current</u>	<u>Re-</u>	<u>marks</u>
				<u>alternative</u>	<u>Quantity</u>	
1	Voltmeter	DPV	150 / 300V	A.C. & P.C.	1	
2	"	EP-2	0-300V	"	1	
3	"	155	0-150V	A.C.	2	
4	Vacuum Voltmeter	B.R.C.-75	0-150V	A.C.	2	
5	Voltmeter	MP-1	0-2A	D.C.	1	
6	"	SP-C	0-25A	A.C.	1	
7	"	D.P.A.	25 / 50A	AC&DC	1	
8	"	370	25 / 5A	"	1	
9	"	K-370	0-5A	A-C	1	
10	"	155	0-5A	"	1	
11	Insulation Re- sistance meter	L-5	4-2000 M <sup>2</sup>	100V	1	

## Survey of Operation Conditions

## 1. Prior to 30 June 1950

- (1) Labor. In carrying out the basic plan by this factory, a shortage of material was keenly felt. Moreover, due to its unfavorable geographic and social conditions, not only the labor distribution but the daily attendance of planned laborers was found insufficient. The following table will prove this fact.

<u>Month</u>	<u>Monthly Planned Laborers</u>	<u>Monthly Registered Laborers</u>	<u>Average month. Registered Laborers</u>	<u>Registered Laboers at month-end</u>	<u>Monthly average work hours</u>
January	5,754	39,383	1,575	1,521	37,387
February	11,754	32,750	1,573	1,503	34,575
March	1,848	40,586	1,503	1,435	37,933
April	1,848	45,083	1,501	1,501	42,435
May	1,960	47,665	1,538	1,548	45,285
June	2,021	49,039	1,634	1,654	46,678

] Labor was organized with working units (brigades) as the basic nucleus of production, dividing workers under the control of unit heads and higher bosses at each workshop for combined production.

(2) The working structure was formed with five sections as follows (prior to April 1950).

Production Department - Electric Machine Section  
 Casting Section  
 Wiring Section  
 Insulating Section  
 Tools Section

Early in April, this structure was changed. They abolished the production department, and started new operation at each workshop as an independent unit. The table of the new structure is as follows:

Chief Engineer - Major Workshop  
 Minor Workshop  
 Casting Workshop  
 Engineering Workshop  
 Roofing Workshop  
 Wiring Workshop  
 Insulating Workshop  
 Tools workshop  
 Industrial Division

(3) Production

a. Electric motors and ~~KRAKSKXXXXXX~~ Transformers.

These are chief products of this factory. The original plan was to produce an average 400 transformers and 150 electric motors per month. But because of a very limited arrival of silicon steel plate, the chief raw material, during the first quarter period with much loss of iron in this imported article, there was no production of transformers and electric motors. During the second quarter of the year, however, comparatively large shipments of silicon steel plate arrived though falling under its planned

quantity. But the production of electric motor was stopped due to the trouble with the power press purch, and a new goal was set up to produce more transformers. As no electric copper arrived, they tried to make electric wires with the solution of scrap copper, but the supply of the first and second wires of transformers was delayed, they failed to accomplish their monthly plan.

b. Oil Breaker

The original plan was an average output of 100 per month. There was some stock of phosphor]bronze plate, but since no copper bars and wires arrived they had to stop production of oil breakers.

c. Resistor

The original plan was an average output of 80 per month. But the production of transformers, electric motor cases, other machine repairs, and castings was more urgently needed, so they produced no resistor,

d. Switches

Due to short capacity of marble cutters, the accomplishment of the original production plan was infeasible.

But the production was continued as the finished articles were turned out with the already cut materials.

e. Uncoated copper Wire and Two Section Electric Wire.

Due to interrupted arrival of electric copper, no continual operation of copper rolling was possible. An attempt was made to promote wire production with collected scrap copper. But due to bad quality of copper, more than 15 percent of the rolled copper was condemned as bad products.

The two section electric wire was produced while the wires for transformer and electric motor were being reproduced, but due to lack of uncoated copper wire

this production was very much limited.

f. Other Products

To produce four section wire and stranded cable, they created a new device and produced some experimental samples of these articles during June.

2. Future Plan

With the readjustment of the evacuated machines, more iron nails, kettles, and farm implements will be produced. At the same time, the already produced electric motors and transformers will be repaired.

(Production Division)

Survey of Actual Production (13 November 1950)

Articles	Standard Specification	Unit	Production		Remarks
			in 1st Quar-	in 2nd Quar-	

Articles	Standard Specification	Unit	Year	Year	Production	Remarks
Articles	Standard Specification	Unit	Production		Remarks	
			in 1st Quar-	in 2nd Quar-		
1. Electric Motor	5 HP	"	4	109	18.5	
2. "	10 HP	"	24	165	31.5	
3. "	20 HP	"	-	7	1.17	
4. "	30 HP	"	-	-	-	
5. "	50 HP	"	-	-	-	
6. Transformer	5 KVA	"	-	119	19.8	
7. "	10 "	"	-	166	27.7	
8. "	20 "	"	42	184	37.7	
9. "	30 "	"	11	129	23.0	
10. "	50 "	"	-	47	8	
11. Transformer	22 KV	"	-	-	-	
for meter						
12."	3.3 KV	"	108	-	19.7	
XXXXX614XXX	40 VA	"	-	-	-	
13. Welder	200V	"	151	61	35.3	
	200A	"	-	-	-	
14. Oil Cutter	3.3 KV	"	-	--	-	
	200A	"	-	--	-	
15. "	3.3 KV	"	-	-	-	
	,400A	"	-	-	-	
16. Resistor	20 HP	"	-	-	-	
17. "	30 HP	"	-	19	3.1	
18. "	50 HP	"	-	48	8	
19. Copper Plate	3-m/m	"	-	-	-	
20. Electric- motor shaft		"	28.7	23.4	8.7	
21. Transformer		"	73.5	86.7	26.7	
Box		"	10.288	12.309	3.766	
22. Micanite		"	3.3408	5.0896	1.465	
23. Empire cloth		"	-	--	-	
24. Varnish	Black	"	-	-	-	
25. "	Raddish- Yellow	"	2.0	11.0	2.17	
26. Uncoated Copper wire	1 m/m	"	0.2	1.4	0.283	
	1.2 #/m	"	-	0.3	0.05	
27. "	1.35 m/m	"	1.1	3.1	0.7	
28. "	1.6 m/m	"	5.4	1.8	1.2	
29. "	1.8 m/m	"	6.0	3.7	1.11	

<u>Articles</u>	<u>Standard Specifi- cation</u>	<u>Unit</u>	<u>Production in 1st Quarter Year</u>	<u>Production in 2nd Quarter Year</u>	<u>Average Monthly Production</u>	<u>Remarks</u>
31. Uncoated Copper wire	20 m/m	\$	3.5	10.7	2.37	
32. "	2.3 m/m	"	2.6	11.3	2.31	
33. "	2.6 m/m	"	25.1	57.1	13.7	
34. "	2.9 m/m	"	-	-	-	
35. "	3.2 m/m	"	39.7	64.1	17.3	
36. "	4.0 m/m	"	9.7	28.1	6.3	
37. "	5.0 m/m	"	69.4	34.5	17.3	
Standard						
<u>No. Articles</u>	<u>specifi- cation</u>	<u>Unit</u>	<u>1st Qu- arter Year</u>	<u>2nd Quarter Year</u>	<u>Average Monthly Production</u>	<u>Remarks</u>
38. Uncoated copper wire	Square wire	\$	16.6	11.2	4.63	
39. "	7/2.6 m/m	"	16.4	31.2	7.96	
40. "	7/2.0 m/m	"	-	5.9	0.98	
41. Double cot- ton covered wire	1.0 m/m	"	0.3	1.2	0.25	
42. "	1.35 m/m	"	0.4	2.5	0.48	
43. "	1.6 m/m	"	2.8	0.9	0.62	
44. "	1.8 m/m	"	3.0	2.3	0.88	
45. "	2.0 m/m	"	-	-	-	
46. "	2.3 m/m	"	2.3	5.4	1.3	
47. "	2.6 m/m	"	0.1	0.9	0.17	
48. "	2.9 "	"	-	-	-	
49. "	Square	"	10.6	11.4	3.7	
50. "	1.4 m/m	"	0.4	0.3	0.117	
51. Uncoated cop- per wire	6 m/m	"	16.6	-	3.77	
52. Two Section Wire	1.6 m/m	"	1.1	-	0.183	
53. "	1.8 m/m	"	-	-	-	
54. "	2.0 m/m	"	0.6	7.5	1.35	
55. "	2.6 m/m	"	4.6	10.8	2.57	
56. "	3.2 m/m	"	33.6	-	5.6	
57. "	4.0 m/m	"	2.9	8.1	1.5	
58. "	5 m/m	"	48.9	20.8	11.62	
59. "	7/2.6 m/m	"	-	-	-	
60. Four Section wire	2.5 m/m	"	-	13.9	.232	
61. "	7/2.0 m/m	"	-	-	-	
62. Steel Bar	19 m/m	"	146.7	382.3	88.07	
63. "	22 m/m	"	25	-	4.17	
64. "	25 "	"	61.8	394.3	76.02	
65. Bipolar Switch	5.0 A	"	1.860	3.479	89.0	
66. "	100A		1.833	1.887	620	
67. The Pole Switch	50A		1.078	1.411	415	
68. "	100A		48	164	35	
69. "	200A		-	-	-	
70. Plate Fuse	20A		368.000	64.000	12.000	
71. "	50A		164.000	317.000	93.500	
72. "	100A		87.200	-	14.530	
73. "	200A		185.200	-	30.870	
74. Thread Fuse	3A	Reel	-	-	-	
75. "	5A	"	-	131	21.8	
76. "	10A	"	-	-	-	
77. "	15A	"	20	-	3.33	
78. "	20A	"	"	-	-	
79. "Bisu"			212.015	78.855	48.480	
80. Marble			3.755	6.452	1.701	
81. Copper plate	03-0.5 m/m	\$	0.6	-	0.1	

<u>No. Articles</u>	<u>Standard Specifi-cation</u>	<u>Unit</u>	<u>1st Qu-arter Year</u>	<u>2nd Quarter Year</u>	<u>Average Monthly Production</u>	<u>Remarks</u>
82.	Copper Plate 0.5 m/m	\$	20.9	-	3.5	
83.	Uncoated Copper wire 1.5 m/m	"	16.6	-	2.77	
84.	Disconnect-ing Switch		1,013	69	180	
85.	Four Section Wire 1.6m/m	"	-	0.1	0.017	
86.	" 2.0 m/m	"	-	3.2	0.53	
87.	Uncoated Electric Wire 1.4 m/m	"	-	1.7	0.28	
88.	Double Cotton Covered Wire 1.2 m/m	"	-	0.1	0.117	

## Post Bill

Chairman (CHO Tae-kwan)

Vice Chairman (PAK Sil-t'aek)

Private Secretary (KIM Chae-sin)

## (1) Executive Division (Director)

Personnel Section (PAK Hong-kyu, Chief; 3 clerks.)

Housing Section (YI Wön-pae, chief; 3 clerks, 5 carpenters,  
5 laborers)General Affairs Section (YANG Btöng-ch'il, chief; 3 clerks,  
15 laborers, 8 cookers).Business Section (O Chun-kwön, chief; 3 clerks, 5 porters,  
8 laborers)Traffic Section (YI Tae-hwa, chief; 15 clerks, 10 laborers,  
25 carpenters, 15 truck drivers)

Inspection Section (AN Nam-un, chief; 15 inspectors, 2 outside clerks.)

Technical Adviser (KIM Tu-hyön)

Guards (KIM Pong-nyong, chief guard; 25 first squadmen,  
25 second squadmen)

## (2) Financial Division (Director)

Supply Section (CHA Pong-si, chief; 5 horse-cart  
drivers, 35 laborers, 5 clerks).

Account Section (YI Pong-ki, Chief; 5 clerks)

Food Section (CHOE Chan-pin, chief; 2 laborers, 2 clerks).

## (3) Production Division (KIM Yong-nyong, Director)

Clerk - CHA Ch'ong-hak

Casting Section (YI Ho-pal, chief, 2 clerks 7 wooden moulders,  
8 laboers, 23 castmen, 26 melters)Power Section (CHONG So-pong, chief, 2 clerks, 12 switchmen,  
9 weak electricians, 23 outside wiremen,  
26 inside wiremen, and 5 laboers)Wiring Section (KIM Myöng-su, chief, 23 wiremen, 2 clerks,  
20 rubber and clothingmen, 26 laboers)Electric Machine Section (CHOE Chun-ok, chief, 2 clerks,  
25 assemblers, 6 laboerers, 25 outside  
electric mechanics, 15 cutters.)Engineering Section (CHOE Ch'ang-ho, chief), 15 canners,  
21 iron smiths, 2 clerks, 18 outside boilermen  
16 civil engineering workers, 7 laboers)Building and Repair Section (KO Tök-yöng, chief, 2 clerks,  
25 lathemen, 15 canners, 23 outside finishers,  
17 ironsmiths, 12 laborers.

Planning Division (YI Pok-yöng, employee)

Technical Division (PYON Su-söng, employee)

Processing Division (KIM Hyöng-ok, employee)

Personnel Statistics by Skill

<u>Post</u>	<u>Technicians</u>	<u>Skill-brain Workers</u>	<u>laborers</u>	<u>Office Worker</u>	<u>Total</u>
Executive Division		71	42	20	135
Financial Division			46	14	60
Production Division	5	443	76	15	539
Inspection Division		15		2	17
Guards			50	1	51
<b>Total</b>	<b>5</b>	<b>529</b>	<b>214</b>	<b>54</b>	<b>802</b>

(1)

Actual Conditions

of

The Pyongyang Electric Bulb Factory

14 November 1950

Operation Condition (Prior to 25 June 1950)

National Electric Bulb Factory, Pyongyang

The National Electric Bulb Factory (under the management of Power Control Bureau, Ministry of Industry) commenced operation on 1 September 1947, and produced about 500 electric bulbs of the Japanese type. Glass bulbs, and glass tubes were also made here by using home materials, while filaments, inducing wires, and other important materials were imported chiefly from South Korea, and were finished by hand.

Due to shortage of exhaust machines, the expansion of this factory was found impossible. There were only 80 employees in the various workshops. In November 1948, the factory moved to a new and larger building where more exhaust machines and hand-control sealing machines were installed. By this time, the number of employees increased to about 300 people.

The fund was operated successfully on the basis of independent accounting system.

Filaments were too scarce to accomplish the planned production, and other attended materials such as phosphoric anhydride, and exhaust rubber were obtained from South Korea through the channel of private traders.

In the technical field, there were only a few skilled workers, and no standard production was guaranteed.

By separate contracts, the factory products were supplied to all plants, mines, consumers' cooperatives, and national commercial organs in North Korea.

The annual production for 1949 was estimated at double amount over previous years or an average daily output for 3,000 electric bulbs. Accordingly a plan was made to mechanize all production process. But contrary to expectation, no automatic manufacturing machines arrived from Dairen, obliging more hand control operation, including the production of tube sealing and opening machines.

Technical education was enforced in order to train skilled workers. The employees got an average monthly salary for 1,000 Wön, which could hardly procure the bare necessities of their daily life. Ration was rarely given at times when it might serve a propaganda purpose.

On the other hand, severe laws were enforced, finding laborers with unseen chains and depriving them of all freedoms. Unless a party member, every labour had to comfort himself as rising in the world when he was picked up to attend lectures at a culture propaganda hall.

In March 1949, steam power was replaced by coal and gas in producing stems and seals of electric bulbs, abolishing the complicated fuels such as oxygen, gasoline, and alcohol.

By a government order of 1 December 1948, the Pyöngyang Electric Machine Shop was closed and all its electric machines, tools, and parts, power press, lathes, bolbands, together with 300 employees were transferred to the new factory where they started production of electric tools and machines, including safety switches, sockets, sealings, consets, attachings, plugs, and gas, etc.

By this time, the factory building was enlarged with the erection of a two-storeyed annex of 100 pyöng, and a repair shop of 40 pyöng, in floor areas, in addition to five employees' homes for 80 families. The construction work was completed by the end of 1949, and 700 employees were accommodated in appropriate quarters. However, they experienced great difficulties due to lack of raw materials such as bituminous coal, 'compound', copper plate, and standardized tools. Among other things, no 'compound' was allocated for this factory.

So they made half-finished ceramic articles at the Chuūl Ceramic Factory, and had them finished for substitute use. But when assembled, they were in bad shape, being out of the standard size.

Partly for bad living conditions of employees, and partly through suppression, about 40 percent of the employees were shaken up, and by expending 3,500,000 Wōn (debt of the control Bureau), they turned out 700,000 Wōn worth of finished electric bulbs. Then, from 1950, they put more energy into the output of gas-filled electric bulbs, and produced high candle-power bulbs of 100 watts. But due to lack of inducing wires and technology, no normal output was possible, and the 200 watt bulb was only a sample product.

By and by, filaments and inducing wires were imported from the Soviet Union, while a geological survey was conducted in Pyōnch'ŏlli, and a plan was drawn to enlarge the factory, but without any actual result.

The life of electric bulbs, made in this factory, lasted only 1,200 hours. The percentages of inferiority were: 40 percent in glass tubes; 20 percent in electric bulbs; 10 percent in other products.

They also drew up a plan to produce exhaust machines, but failed in the actual production, and were obliged to use the existing machines with repairs, while they drew supplies of exhaust rubbers from the Pyōngyang Special Rubber Factory; other materials through traders; bituminous coal from the Sinyusōn Coal Mine up to 300 tons per month, and Manchurian coal via they Kyōmipō Iron Mill up to 500 tons per month; copper plates from the Sōngjin Steel Mill up to 20 tons per month. These copper plates were reshipped to the Kangsō Electric Machine Shop, where they were rolled by 0.3 percent to 0.5 percent, while rolling some of these plates with their own rollers.

During the year under review, they began to produce indoor lamps, which were coarse and superfluous. Moreover, due to superabundant staff, and waste of supplies and other expenses the price exceeded the production cost. Thus a finished electric bulb was selling at 60 W n for 700 watts; 50 W n for 60 watts; 40 W n for 40 watts. At the same time, due to bad transportation, the supply of coal was insufficient, which resulted in the delayed supply of all important materials.

In the field of fund, the price of merchandise, sold by contract, amounting to 7,000,000 W n, was uncollected at consumers' cooperatives and commerce control bureaux. Thus the bank debt was added up to 5,000,000 W n.

No fund was loaned by the Government, the debts, including those borrowed from the control Bureau and from others appeared to have exceeded claims. But due to lack of vouchers, no accurate figures are available.

The production plan for May was: 15,000 electric bulbs; 5,000 mine lamps; 32,000 cubic meters of gas; 3,600 tumbler switches; 2,500 attaching plugs; 250,000 electric bulb sockets; 20,000 table lamps.

Then the dproduction plan for June was: 300,000 electric bulbs; 8,000 mine lamps; 60,000 cubic meters of gas; 9,000 sockets; 3,000 receiving setsl 4,000 tumb er switches; 1,000 attaching plugs; 360,000 electric bulb sockets; 11,000 indoor lamps. But the actual production was only about 40 percent of these plans.

The above is a brief report of business operation prior to June.

## (Equipment) Business Report of Electric Bulb Factory

<u>Articles</u>	<u>Type</u>	<u>Unit</u>	<u>Quantity</u>	<u>Remarks</u>
Lathe	Using English 11 foot belt	1	Now usable	Building & Repairshop
"	" 8 "	1	"	"
"	" 6 "	1	"	"
Bolban	12 inch belt	1	"	"
Shaver	22 inch belt	1	"	"
Machine Saw	10 " 20 HP	1	"	"
Electric Motor	To run machinery 5 HP	1	"	"
"	for grainding (223 ft)	1	"	"
Lock Plate	for finishing (5m)	1	"	"
Universal Power				
Machine	for finishing	3	"	"
Blower	for casting	1	"	"
Transmitter	for blacksmith	1	"	"
Loading Press	Made in Korea	2	"	Metal Plate shop
Machine Apron	"	2	"	"
Bar Press	"	3	"	"
Power Press	"	3	"	"
"Balc'hagi"	"	6	"	"
Hand Press	"	1	"	"
"Exing" Press	" 7.5 HP	9	"	"
Electric Motor	for running press 20 HP	1	"	"
"	for running rollers	1	"	"
Roller	16 inches	1	"	"
Cutter		1	"	"
Universal Power				
Machine	5	1	"	"
Air Pump		2	Unusable	Electric workshop
"Kwaksan" Pump		1	Usable	"
Sealing Machine	Hand control	14	Out of 14 Machines	"
			4 need repair	
Automatic Sealing				
Machine		1	Unusable	"
Automatic Stem				
Machine		1	"	"
Air Heater		15	Usable	"
Pipe Openig Machine		3	Unusable	need repair
Stem Heater		22	Unusable	
Electric Bulb				
Text Stand		1	Unusable (broken)	

Stores

<u>Articles</u>	<u>Unit</u>	<u>Quantity</u>	<u>Remarks</u>
Soda ash	#	10	as of 7 November 1950
Copper Plate	"	2.5	"
Crucible		35	"
Saltpeter	"	1	"
Borax	"	1	"
Antimony	"	1.5	"
Lead	"	1	"
Sodium Arsenite	K	100	"
Red Lead Oxide	"	200	"
Tumbler	"	1,500	"
Safety Switch		400	"
Lamp	set	1,000	"
Button	box	20	containing 5,000 buttons in each box
Motor		8	
Oil	drum	7	No separate figures for each kind of oil are available

## Furniture

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u>	<u>Remarks</u>
Table	for office use		8	Usable
Chair	revolving		8	"
Safe	large and small		2	Unusable (broken)
Stove			5	Usable

## Buildings

<u>Kind</u>	<u>Floor Area</u>	<u>Structure</u>	<u>Use</u>	<u>Remarks</u>
Main Office rooms of each workshop	pyöng 300	Tilerooft, cement & brick, too storied	Usable	Office rooms, metal plate workshop, elec-tric bulb workshop, Windows & all need re-pair.
Repair Workshop	50	" one storied	"	"
Glass Workshop	166	"	"	"
(1) Warehouse	100	" two storied	"	"
(2) Dormitory	120	" one storied	Unusable	Windows, ceiling & hotfloor, need repair
Dormitory & Warehouse	120	" "	usable	
Bathroom	20	" "	"	
Guardroom	10	"	"	
Gas generating factory	60	Tile roof, red brick, unusable two storied		
Employees' Homes	100			Including usable & Unusable houses.

## Actual Production

<u>Articles</u>	<u>Standard Specification</u>	<u>Daily production</u>	<u>Remarks</u>
Electric Bulb	40W 60W 100W 80W 20W	3,000 pc's	Pre-War Production
Safety Bulb		100	"
Socket		60	"
Tumber switch		85	"
Carbon lever		4	"
Hanger		40	"
Ketch		20	"
Table Lamp		130 Sets	"
Hanging Lamp		50 "	"

## Five Year Plan of Manchuria (1942)

	154,000 KW
1. Dairen	6,800
2. Yingkow (Newchang)	16,000
3. Antung	49,250
4. Hsinking (Changchun)	38,000
5. Harbin	1,000
6. Chincow	15,000
7. Peili	160,000
8. Fuhsin	106,000
9. Yünhö	270,000
10. Fushun	123,500
11. Anshan	9,700
12. Penhsihu	260,000
13. Amnokkang (The Walu)	420,000
14. Sungari	30,000
15. Chingpeihu	188,755
16. Other	
Total	1,987.505
q Steam Power	1,177,505
Water Power	810,000

## Electric Boilers (February 1950)

	30,000 KW
1. Hungnam Fertilizer Factory	30,000
2. Pongung Chemical Factory	15,000
3. Hungnam Gunpowder Factory	5,000
4. Hungnam Refinery	8,000
5. Chöngsu Chemical Factory	4,000
6. Söngjin Steel Mill Factory	8,000
7. Kilchu Paper Mill	3,000
8. Hungnam Laboratory	
Total	99,000

Remarks: Due to breakdown of Coal Boiler at the Aoji

Synthetic Oil Factory, 15,000 KW. was temporarily

used.

Variation of Demand

<u>Year/Kind</u>		<u>Electric Lamp</u>	<u>Electric Power</u>	<u>Electric Heat</u>
1956	Houses	415,648	6,658	7,350
(End of September)	Quantity	1,275,572	542,230	13,731
1946	Houses	503,612	7,144	15,367
(End of December)	Quantity	1,247,240	628,052	21,642
1947	Houses	533,862	9,894	23,937
(End of December)	Quantity	1,260,108	714,886	37,654
1948	Houses	650,693	10,576	11,635
(End of December)	Quantity	1,467,101	798,265	10,387
1949	Houses	660,000	11,000	10,000
(End of December)	Quantity	1,520,000	871,928	9,700
1950	Houses	680,000	10,696	5,000
(August)	Quantity	1,520,000	850,000	5,000 KW

## Possible Generation of Electricity and Estimated Burden

during Dry Season in 1950

1. Reservoir Water available as of 15 January

<u>Reservoir</u>	<u>Waterlevel at Reservoir</u>	<u>Reservoir water available</u> <u>106m<sup>3</sup></u>	<u>Reservoir water available</u> <u>106m<sup>2</sup></u>	<u>Percentage of 1950 against 1949</u>
Supung	111, 720	4,009	3,680.6	109
Changjingang	10,940	236.7	202.3	117
Puchøngang	10,925	91.2	124.5	73
Hochøngang	10,560	188.8	177.2	107
Total	-	4,525.7	4,184.6	108

Remarks: The above figures were adapted from the "Electric Supply Daily", Power Control Bureau.

## 2. Estimated Flow

<u>Month</u>	<u>Supung</u>	<u>Changjingang</u>	<u>Puchøngang</u>	<u>Hochøngang</u>
January	103.2 M3/sec.	4.9	2.1	5.6
February	71.7	3.6	1.5	4.9
March	292.9	6.4	2.8	7.2
Total	467.8	14.9	6.4	17.7
Aggregate flow against above total	106m <sup>3</sup> 1212.5	106m <sup>3</sup> 38.7	106m <sup>3</sup> 16.6	106m <sup>3</sup> 45.8
65percent of normal year	788.1	25.1	10.8	29.8
Minimum flow	-	12.7	7.5	12.2
average flow in 1948 & 1949	492.0	39.7	15.5	22.6

Remarks: The above figures show average yearly flows from 1925 to 1949.

## 3. Possible power generation by the above flow.

(1) When the flow from 15 January to 15 April is considered as 65 percent of a normal year.

<u>Particulars</u>	<u>Sup'ung</u>	<u>Changjingang</u>	<u>Puch'onggang</u>	<u>Hoch'onggang</u>
Reservoir water as of 15 Jan.	106m <sup>3</sup> 4009	236.7	91.2	188.8
Flow from 15 Jan. to 15 Apr. (65 percent of normal year)	788.1	25.1	10.8	29.8
Possibly freezing water	65.0	13.7	6.0	6.3
Possible power generating water (up to 15 Apr.)	4,741.1	248.1	96.0	212.3
Effective Head	77m	920	1037	933
Efficiency	80 percent	83	80	85
Possible average genera- tion of power	367,000 KW	239,000	99,000	212,000

- Remarks: (1) Considering only two generators working at Sup'ung (60-system) the generated power would be 160,000 KW.  
 (2) Considering generated power as 18,000 KW. in Kangwön-do and 3,000 KW. in Puryöng, the possible average generation of power between 15 January and 15 April would be 731,000 KW.

(II) Possible Power Generation when the flow between 15 January and 15 April is considered as equal to the average flow 1948 and 1949.

<u>Particulars</u>	<u>Sup'ung</u>	<u>Changjingang</u>	<u>Puch'onggang</u>	<u>Hoch'onggang</u>
Reservoir water as of 15 Jan.	106m <sup>3</sup> 4009	236.7	91.2	188.8
Flow between 15 Jan. & 15 April is equal to average flow of 1948 & 1949	942	39.7	15.5	22.6
Possibly freezing water	56	13.7	6.0	6.3
Possible power gener- ating water	4895	262.7	100.7	205.1
Effective Head	77m	920	1027	933
Efficiency	80 percent	83	80	85 percent
Possible average genera- tion (of power) between 15 January & 15 April	380,000	253,000	104,000	205,000

1. Sup'ung (60 - system) 160,000 KW
2. Kangwön-do and Puryöng System 21,000 KW
- Total possible generation (average) 743,000 KW

(III) Possible power generation when the flow between 15 January and 15 April is considered as equal to the average flow of 1925 - 1949.

<u>Particulars</u>	<u>Sup'ung</u>	<u>Changjingang</u>	<u>Puchöngang</u>	<u>Hochöngang</u>
Reservoir water as of 15 Jan.	106m <sup>3</sup> 4009	236.7	81.2	188.8
Flow between 15 Jan. and 15 April	1212	38.7	16.6	45.8
Possible power generating water up to 15 Apr.	5212	275.4	107.8	234.6
Effective Head	77m 920		1627	833
Efficiency	80 percent	83	80	85
Possible average generation (of power)	407,000	266,000	111,000	234,000

1. Sup'ung (60-system) 160,000 KW
  2. Kangwön-do and Puryöng System 21,000 KW
- Total possible generation (average) 792,000 KW.

4. Comparison of necessary water for power plants with actual flow after 15 April

<u>Power Plants</u>	<u>Necessary water on basis of estimated burden for Apr. &amp; May</u>	<u>65 per. normal year</u>		<u>Actual average flow (1925-1949)</u>	
		<u>Flow in April</u>	<u>Flow in May</u>	<u>April</u>	<u>May</u>
	100 m <sup>3</sup> /Sec.	93	103	143	159
Sup'ung	562	523	580	804.4	894.9
Changjingang	100 290	64 18.5	73 21.3	97 28.2	113 32.8
Puchöngang	100 11.9	65 7.8	70 8.4	100 11.9	108 12.9
Hochöngang	100 23.5	71 16.6	69 16.3	108 25.5	107 25.1
Total	100 626.4	90 565.9	100 626.0	138 870.0	107 965.7

(1), The necessary water shows the total average generating power.

(2) The flow in April and May is considered as 65 percent of the average actual flow.

5. Necessary power on the basis of Section 4 (above) and possible generation of power after April.

<u>Power Plants</u>	Necessary power on basis of es- timated burden for April	When flow is 65 per. On basis of actual of normal year flow (1925-1949)			
		Pos. Gen. in Apr.	Pos. Gen. in May	Pos. Gen. in April	Pos. Gen. in May
Sup'ung	160,000 KW	160,000	160,000	160,000	160,000
Changjingang	218,000	140,000	159,000	212,000	246,000
Puch'onggang	96,000	63,000	67,000	96,000	104,000
Hoch'onggang	183,000	130,000	126,000	198,000	196,000
Kangwon	18,000	18,000	18,000	18,000	18,000
Puryong	3,000	3,000	3,000	3,000	3,000
Total	678,000	514,000	533,000	687,000	727,000
Generating power on basis of thawing reservoir water	-	50,000	-	50,000	-
Spare power during three months (15 <sup>th</sup> January-15 April)		40,000	40,000		
Grand Total	678,000	604,000	573,000	737,000	727,000

6. When the flow in April and May is considered as equal to the average flow of two years (1948 - 1949)

<u>Reservoir</u>	Nec. wat. on basis of esti- mate for April and May	Flow in April	Flow in May
Sup'ung	100 m <sup>3</sup> /sec.	105 m <sup>3</sup> /sec.	187 m <sup>3</sup> /sec.
	562	590	1051.5
Changjingang	100 29	83 240	78 22.5
Puch'onggang	100 10.9	77 9.1	70 8.3
Hoch'onggang	100 23.5	92 21.5	112 26.4
Total	100 626.4	103 644.9	177 1108.7

Remarks: The necessary water shows the volume of the estimated generating burden for 675,000 KW.

7. The necessary power on basis of Section 6 and  
The possible generation of power after April

<u>Power Plant</u>	<u>Necessary power generation on basis of estimated burden for April &amp; May</u>	<u>Possible power generation in April</u>	<u>Possible power generation in May</u>	<u>Remarks</u>
Supung	160,000 KW	160,000	160,000	
Changjingang	218,000	181,000	170,000	
Puch'onggang	96,000	74,000	67,000	
Hoch'ongang	183,000	168,000	205,000	
Kangwon	18,000	18,000	18,000	
Puryong	3,000	3,000	3,000	
Total	678,000	604,000	623,000	
Generating power of thawing reservoir water		50,000	-	
Spare power during three months (15 Jan. to 15 April)		20,000	50,000	
Grand Total	678,000	674,000	673,000	

8. Estimated Burden

<u>Particular</u>	<u>Actual results of previous year (average of November &amp; December)</u>	<u>Average power of three months (15 January - 15 April)</u>	<u>Average power of half month (15-30 April)</u>	<u>Average power in May</u>
Actual results of 1949	100 KW 640,000	101 648,500	94 600,000	90 577,000
Estimated results of 1950	715,000	711,000	670,000	650,000

9. Conclusion

- (I) Considering the average flow of four and half Months (15 January - 31 May) as 65 percent of normal year

<u>Particulars</u>	<u>15 January</u>	<u>15 April - 30 April</u>	<u>May</u>
Possible power generation	KW 711,000	KW 604,000	KW 573,000
Estimated burden	711,000	670,000	650,000
Shortage of power	-	66,000	77,000

II) Considering the average flow of four and half months  
 (15 January - 31 May) as equal to the average flow  
 of two years (1948 - 1949)

<u>Particulars</u>	<u>15 January-15 April</u>	<u>16-30 April</u>	<u>May</u>
Possible generation of power	KW 743,000	KW 737,000	KW 727,000
Estimated burden	711,000	670,000	650,000
Spare power	30,000	67,000	77,000

Remarks: The spare power of the Kangwön-do system  
 was not considered.

III) Considering the flow of three months (15 January -  
 15 April) as 65 percent of normal year, and the flow  
 of one and half months (16 April - 30 May) as equal  
 to the actual average results of two years (1948-1949)

<u>Particulars</u>	<u>15 January-15 April</u>	<u>16-30 April</u>	<u>1-30 May</u>
Possible generation of power	KW 711,000	KW 674,000	KW 673,000
Estimated burden	711,000	670,000	650,000
Spare power	-	4,000	23,000

Remarks: The spare power of the Kangwön-do system  
 was not considered.

Volume of Flow by Reservoirs unit M3/sec.

<u>Reservoir</u>	<u>Month</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
Changjingang		4.9	3.6	6.4	28.2	32.8	34.2	75.0	97.5	21.1	12.7	7.6	366
Puchöngang		2.1	1.5	2.8	11.9	12.9	16.1	30.7	40.3	21.4	10.1		

Volume of Flow by Reservoirs unit m<sup>3</sup>/sec.

<u>Reservoir/Month</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>	<u>Average</u>
Changjingang	4.9	3.6	6.4	28.2	34.2	34.2	75.0	97.5	42.4	21.1	12.7	7.6	366.1	(1925-1949) 130.5 (1927-1949)
Puch'ongang	2.1	1.5	2.8	11.9	12.9	16.1	30.7	40.3	21.4	10.1	6.2	3.3	159.3	13.3 (1925-1949)
Sach'bonyong	1.1	1.2	1.4	4.4	4.1	6.7	12.2	14.6	11.8	4.1	2.7	1.5	65.8	5.5
Naejungni	0.8	0.5	0.8	3.0	2.8	4.2	8.9	10.8	6.7	3.0	1.7	0.9	44.1	3.7
Hwangsuw'on	1.3	1.0	1.7	5.8	5.9	8.8	18.3	24.2	15.7	6.3	3.8	2.1	94.9	7.8
Hwangtupyong	2.4	2.2	3.3	12.3	12.3	20.5	31.4	46.1	24.5	11.6	7.4	3.3	177.3	14.8
Total	5.6	4.9	7.2	25.5	25.1	40.2	70.9	95.7	58.7	25.0	15.6	7.8	382.1	31.8
Sup'ung	103.2	71.7	292.9	804.4	894.9	953.5	2185.3	2227.7	890.8	424.5	315.9	126.1	9290.9	774.3

## Consumption of Electric Power by Industries

<u>Industries</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u> (1st quarter)
Metal	115,245,331	370,101,611	1,256,192,388	366,654,736	105,373,875
Machine	3,531,227	20,417,381	27,459,922	54,162,955	18,409,030
Mining	33,718,375	118,361,595	168,476,606	158,566,605	48,066,728
Coal	35,784,792	51,262,663	60,900,061	71,923,960	19,741,461
Chemistry	1,832,325,266	2,675,105,356	2,280,392,938	3,226,716,634	928,396,902
Building Material	25,738,082	50,421,407	78,822,694	92,117,966	23,503,084
Light Industry	56,323,136	125,786,106	160,317,519	173,132,999	57,415,954
Electricity	38,455	1,678,645	3,077,557	6,190,262	1,879,563
Vehicle	1,928,336	3,738,785	5,080,451	6,103,908	2,706,577
Civil Engineering	2,566,020	2,586,976	6,511,341	8,964,354	4,047,572
Water Pumping	9,274,324	17,951,587	32,657,697	49,420,717	3,412,387
Monopoly	1,779,737	18,531,217	33,338,354	19,639,662	333,613
Public Utilities	25,782,557	33,167,370	46,081,446	58,354,034	15,588,326
Other	5,531,489	26,143,141	55,146,634	32,237,719	13,888,458
Total	2,249,742,396	33,615,394,820	4,238,956,608	4,325,186,511	1,243,574,050
China	510,985,742	389,455,824	545,333,361	595,467,526	220,112,441
South Korea	461,739,893	577,197,464	203,187,342		
Electric Lighting	86,844,016	103,291,033	134,970,071	226,859,305	71,439,367
Electric Heating (fixed amount)	1,743,762	7,214,936	10,019,020	4,419,352	673,398
Undertakings	625,895,817	55,714,765	115,713,019	187,479,236	27,833,837
Loss	568,855,205	848,529,865	882,648,329	675,870,919	201,463,707
Total	1,693,064,435	1,981,403,897	1,891,871,144	1,599,934,529	521,522,750
Grand Total	3,942,806,831	5,596,798,716	6,130,827,752	5,924,121,340	1,765,096,800

## Cost of Power for Electro-chemical products

## 1. Fertilizers

<u>Kind</u>	<u>Prior to Liberation (15 August 1945)</u>	<u>Existing Rates</u>
Wattage - per \$ production of ammonium sulphate	3,200 KWH	3,200 KWH
Power cost " "	32 Wön	112 Wön
Selling price - per \$ ammonium sulphate	104 80	3,588 00
Power cost versus selling price (percent)	30.6	3.12
Power rates per KWH	1 Chön (100/1 Wön) 3.5 Chön	

## 2. Carbide

<u>Kind</u>	<u>Prior to Liber- ation (15 Aug 45)</u>	<u>Existing Rates</u>	<u>Remarks</u>
Wattage per \$ production of carbide	3,000 KWH	3,000 KWH	
Power cost " "	30Wön	111,60Wön	
Selling price per \$ carbide	204.75 Wön	4,212.45 Wön	
Power cost versus selling price (percent)	12.4 percent	2.65 percent	
Power rates per KWH (average)	1 Chön (100/1 Wön)		2.93 Chön

## 3. Sodium Hydroxide

<u>Kind</u>	<u>Prior to Liber- ation (15 Aug. 45)</u>	<u>Existing Rates</u>	<u>Remarks</u>
Wattage per \$ production of Sodium hydroxide	4,000 KWH	4,000 KWH	
Power cost " "	40 Wön	144.80 Wön	
Selling price per \$ sodium hydroxide	275,57 Wön	18,342.00 Wön	
Power cost versus Selling price (percent)	14.5 percent	0.79 percent	
Power rates per 1 KWH (average)	1 Chön (100/1 Wön)		3.62 Chön

Outline of Electrical Industry in North Korea at the  
time of Liberation (15 August 1945)

1. The Korean Power Company, Ltd., (Choson Chonkôp)

Capital (authorized)	341,730,000
Capital paidup	(unavailable)
Fixed Assets	850,840,000
Debt	624,514,000
Generating Equipment	948,000 KW
Service Line for Direct Supply	750.000 KW
Number of Employees	2,590

2. The Amnokkang Hydroelectr ic Company

Capital (authorized)	125,000,000
Capital paidup	75,000,000
Fixed Assets	202,780,000
Debt	137,000,000
Generating Equipment	700,000
Number of Employees	672

3. West Korea Consolidated Electric Co. Ltd.,  
(Soson Haptong Chonggi)

Capital (authorized)	30,000,000
Capital paid up	4,900,000
Fixed Assets	30,381,000
Debt	12,950,000
Power Supplied	
Electric Lamps used	811,500 lamps
Electric Power used	167,500 KW
Electric Railroad	13 KW
Number of Employees	3,000

4. North Korea Consolidated Electric Co. Ltd.,  
 (Puksǒn Haptong Chǒngi)

Capital (authorized)	11,500,000
Capital paid up	(unavailable)
Fixed Assets	21,024,000
Debt	1,160,000
Power Supplied	
Electric Lamps used	557,300 lamps
Electric Power used	103,200 KW.
Number of Employees	1,090

5. The Seoul Electric Co. Ltd., (North of 38th Parallel)  
 (Kyǒngchǒn or Keiden)

Fixed Assets	9,550,000
Power Supplied	
Electric Lamps used	59,300 lamps
Electric Power used	8,600 KW
Extension of Electric Railroad Lines	67.6 Km.
Number of Employees	676

6. Total

Fixed Assets	779,185,000
Generating Equipment	1,648,000 KW
Power Supplied	
Electric Lamps used	1,428,100 lamps
Electric Power used	279,300 KW
Special Service Power	750,000 KW
Number of Employees	8,028

Comparison of Indice Showing Increase of Power Production

<u>No.</u>	<u>Factory</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>
		HP Index				
1.	Sōngjin Steel Mill	100 Product. Index	175	225	190	(187)
		100	200	336	350	
2.	Chōngsu Chemistry	180 100	173 333	213 710	224 760	(225)
3.	Kangsōn Steel Mill	100 100	251 290	590 615	870 750	(1030)
4.	Sunchōn Chemistry	100 100	132 160	166 156	181 212	(180)
5.	Hwanghae Iron Mill	100 100	186 552	310 1380	328 1700	(326)
6.	Namp'o Refinery	100 100	670 165	820 165	830 185	(820)
7.	Sudong Anthracite	100 100	110 110	115 144	108 143	
8.	Sōnghŭng Mine	100 100	111 111	140 111	140 102	
9.	Suan Mine	100 100	195 152	310 176	223 148	
10.	Taeyudong Mine	100 100	130 162	138 415	162 505	
11.	Hăngnyŏng Coal Mine	100 100	72 232	195 310	174 240	
12.	Sunghori Cement	100 100	108 254	200 376	154 535	
13.	Chōnma Mine	100 100	300 305	385 343	319 200	
14.	Sinmiju Paper Mill	100 100	376 220	245 240	248 338	
15.	Haeju Cement	100 100	260 675	280 325	243 1400	
16.	Madong Cement	100 100	250 270	300 355	363 600	

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## Labor Plan (1949)

Enterprise	Production	Productive				Total	Non-Productive	Total
		Basic Construction	Gaborers Workers	Skilled Workers	Office Engineers	Total	Affiliates Held by Differ.	
Sufung	Production	28	242	28	15	3	14	253
	Industrial	28	149	6	6	—	292	292
	Blechstahl	16	149	4	6	3	103	103
	Total	75	392	34	27	8	349	349
Hochwang	Production	95	429	58	13	1	293	292
	Industrial	26	149	17	4	—	243	243
	Total	121	578	75	17	1	536	536
Changning	Production	122	322	12	30	—	247	247
	Industrial	113	149	3	3	—	152	152
	Total	235	471	15	33	—	400	400
Hucheng	Production	115	314	33	13	1	239	239
	Industrial	102	149	10	10	—	142	142
	Total	217	463	43	23	1	382	382
Kangtze	Production	97	313	30	13	1	239	239
	Industrial	97	149	10	10	—	147	147
	Total	194	462	40	23	1	386	386
Gengyang	Production	12	309	50	—	—	—	309
	Industrial	20	149	—	—	—	—	20
	Total	32	458	50	—	—	—	458
	Production	16	227	4	91	2	342	342
	Industrial	10	149	1	1	—	26	26
	Total	26	376	5	93	2	368	368
	Production	12	295	41	35	2	372	372
	Industrial	14	149	2	1	—	166	166
	Total	26	444	43	36	2	538	538
Iyengan	Production	12	295	41	35	2	372	372
	Industrial	14	149	2	1	—	166	166
	Total	26	444	43	36	2	538	538
Nanpo	Production	16	304	43	36	2	372	372
	Industrial	10	149	1	1	—	120	120
	Total	26	453	44	37	2	492	492
Haiju	Production	13	260	17	12	1	343	343
	Industrial	13	149	7	7	—	370	370
	Total	26	409	24	19	1	713	713
Sinjue	Production	13	305	19	72	—	370	370
	Industrial	13	149	2	1	—	152	152
	Total	26	454	21	73	—	522	522
	Production	13	192	7	39	1	162	162
	Industrial	13	149	1	1	—	143	143
	Total	26	341	8	40	1	305	305
Nanpo	Blechstahl	22	15	1	1	—	39	39
	Total	25	179	8	40	1	214	214
	Polymer	13	215	12	57	1	292	292
	Industrial	26	149	1	1	—	42	42
	Total	39	369	13	52	1	334	334
							16	350

Hanjiang	Kuangtun	21	142	15	92	1	293	72	5	1	40
	Guanzhuang	5	36	2			311				37
	Total	26	192	19	92		520	72	5	12	349
Chongjin	Kuangtun	18	210	13	90		311	80	8	85	932
	Guanzhuang	14	24	1			31				37
	Total	32	234	14	90		653	80	8	120	969
Hechuan	Kuangtun	12	120	2	92		311				37
	Guanzhuang	10	50	2							36
	Total	22	170	2	92						93
Wuzhixian	Kuangtun	13	130	13	92		311				37
	Guanzhuang	1	1	1			31				37
	Total	14	131	14	92		312				37
Total	Kuangtun	151	352	223	102		311	72	5		119
	Guanzhuang	119	140	19	35		31				263
	Total	270	492	242	135		653	72	5		342
Tengxian	Kuangtun	149	172	50	90		311				37
	Guanzhuang	126	64	9	49		31				36
	Total	275	236	59	90		343				73
Shuitian	Kuangtun	132	348	5	92		311	72	5		119
	Guanzhuang	96	6	1			31				37
	Total	228	354	6	92		342	72	5		156
Kuangtun	Kuangtun	146	160	34	92		311	72	5		119
	Guanzhuang	113	33	13	49		31				36
	Total	259	193	47	92		342	72	5		155
Kuangtun	Kuangtun	171	173	20	92		311				119
	Guanzhuang	113	103	17	49		31	72	5		216
	Total	284	276	37	92		343	72	5		335
Electric	Kuangtun	205	213	21	92		311	72	5		119
	Guanzhuang	152	3	2			31				37
	Total	357	216	23	92		343				156
Buli	Kuangtun	152	152	3	92		311				119
	Guanzhuang	99	9	4			31	72	5		119
	Total	251	161	7	92		342	72	5		238
Total	Kuangtun	193	582	35	128		311	65	57	12	1049
	Guanzhuang	132	100	10	54		31	22	8		323
	Total	325	682	45	128		343	65	57	12	1372
Total	Kuangtun	162	162	50	102		311	72	5		119
	Guanzhuang	118	229	21	89		31	59	42		492
	Total	280	391	71	102		343	72	5		626
Grand Total	Kuangtun	3591	2386	123	156		311	65	57	12	1048
	Guanzhuang	2498	1062	556	1284		31	1953	72	12	848
	Total	6089	3448	680	1284		343	65	57	12	18709

## Graph of Price Index

200

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## Graph of Electric Light Rates

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( 31 December 1949 )

## Smithson and Lamps

Loss of Power at Dairen Transmission Line 16.3

1. Power Line 1. A.C.S.R       $45 + 45\sqrt{3} \text{ MVA}$   
 $R = 0.0465 \text{ ohms/Km}$

2. Length 342.4 Km

3. Charging Current 134 Ampere

Formula used

$$\pi = 3R.L((I^2 + I^2 \sin^2 \theta) \cdot 10^{-2})$$

Refractive 90% Assumption since  $\approx 43.6^\circ$

Distance M.W.	$E_f = 200$ KV hours	$E_d = 180$ KV hours	
40 M.W	11.20	10.80	3.36
50	16.60	15.840	4.08
60	23.70	21.930	4.88
70	32.20	29.60	5.70

Voltage drop 6.5%

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## Electric Power in Demand

Products	Mining Prod. in \$	Remarks	Products	Mining Prod. in \$	Remarks
Carbide	3,000	KOH	Sulfuric acid by electrolytic process	15,000	
Phosphor	10,000		Mercury tank	2,400	
Silicon hex 95%	6,000		Manganese iron	4,000	
Carbon Tetrachloride	8,000	Ind. insulator Bogite, Barite, Fertilizer fine and aluminum	Electric E. C. l.	4,000	
Aluminum	20,000	Hydroxide, Calcined copper oxide	Electric E. C. l.	4,000	
"	40,000	Graphite	Electric E. C. l.	3,500	
"	30,000	Graphite powder	Electric E. C. l.	3,500	
Magnesium	30,000		Electric E. C. l.	3,000	
Sodium Hydroxide	4,000		Synthetic fuel	2,400	New hydro source is derived from lime
Electric Copper	3,000		"	5,000	New hydro source is derived from water desalination
Manganese Sulfate	3,200		Synthetic fiber	20,000	
Methane	15,000		Synthetic graphite	65,000	
Calberamide	8,000		Mercury tank	25,000	
Synthetic Rubber	90,000		Mercury tank	5,000	
				15,000	

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## Comparison of Electrified Farm Implements and Human Labor

Implements.	Labor(��man)	Motor(1/4HP)	Comparison	Remarks
Rice Threshing	780 m <sup>2</sup>	4,903 m <sup>2</sup>	625%	
Rice Hulling	4 bags	40 bags	1000 "	
Pumping	60 'sec	250 'sec	400 "	
Rice Cleaning	6 'mal	1.5 'sec	250 "	
Straw-rope Making	8 'min	40 'min	500 "	
Flour Milling	15 'mal	5 'mal	300 "	

Implements	Experimental Time required for 100 kg rice	Quantity dis- posed per day	Time necessary to dispose of one sack	Power necessary to dispose of one sack
Rice Threshing	17	5" 46'	5.6 'sec	62 m. 0.41 KwH
Rice Hulling	16	2" 55'	4.8	34 m. 0.42
Rice Cleaning	11	-	0.75	3.20
Flour Milling	3	-	0.66	7~11.2

8 November 1950

Conditions of Streetcar Business

Division of Duties (as of 25 June)

Manager

Chief Engineer

Commodity Supply Section

General Affairs Section

Material Section

Transportation Division

Transportation Section  
Business Section

Financial Division

Accounting Section  
Budget Section  
Property Custody Section

Overhauling Section

Engineering Division

Construction Section  
Track Section  
Rolling Stock Section  
Power Section

Labor Division

Wage Section  
Standard Quantity Section

Staff Division

Training Section  
Staff Section

Planning Division

Safety Engineer

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Transformer Substation

Substation	Equipment capacity	Tools & Machinery	Damaged	Engineers	Remarks
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Kanggye (Hamach) No. 18. Transformer capacity 500 KVA  
Kanggye 3200 KVA - 600 V 400 KVA

Miungni Jukkiri Transformer capacity 600 KVA  
1625 KVA 600 V 400 KVA

Jiengnii (Hamach) No. 12. Transformer capacity 600 KVA  
Jiengnii 615 KVA 600 V 400 KVA

Substation Equipment

Locality	Substation	Transformer			Power
		KVA	Volt	Amp	
P'yongyang	Kanggye	300	360	100	Fiji
"	"	300	360	100	downing rectifier
P'yongyang	Jiengnii	450	725	330	160
"	"	330	555	160	160
P'yongyang	Jukkiri	400	650	220	BBC
"	"	220	450	160	160

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Survey of Electric Railroad Business 148  
(as of 25 June)

Crossbar 12,694 m

Extension 185,032 m

Number of cars	21	Small size car	21	Medium size	14	Large size	11	as of 25 June
Number of cars	20	Small size car	20	Medium size	13	Large size	6	as of 20 October

Number of Employees

Office worker	Brilliant	Belleville	Metamora	Architects	Inspectors	Switchers	Guards	Registered
67	7	132	132	121	28	45	10	36

Survey of Buildings (as of 30 June)

Kind	Power plant	Transmission	Substation	Switching station	Office	Residence	Warehouse
Number of buildings	1	1	1	1	1	1	1
Stories	1	1	1	1	1	1	1
Floor area	2,764	2,976	1,473	973	1,062	1,062	1,062
Structure	Brick	Brick	Brick	Brick	Brick	Brick	Brick
Roof	Flat	Flat	Flat	Flat	Flat	Flat	Flat

Land and Property

Power plant	Transmission	Substation	Switching station	Office	Residence	Warehouse
2.46	2.69	2.27	2.38	2.42	2.07	2.07

Survey of Operation Condition

The streetcars were run under the name of the Streetcar Business Office, Power Control Bureau, Department of Industry. The per diem average run as of 25 June is shown below:

<u>Number of cars</u>	<u>Cars on run</u>	<u>Kilometers run</u>	<u>Number of Passengers</u>	<u>Receipt</u>
51	29	5200 Km	140,000	70,000 W <sup>on</sup>

The average operation condition during October (after bombing) gives the following figures.

<u>Number of Cars</u>	<u>Cars Destroyed</u>	<u>Cars on run</u>	<u>Kilometers run</u>	<u>No. of Passenger</u>	<u>Operat ion hours</u>
51	30	10	500 Km	3500	15,000 W <sup>on</sup>

Plan for future operation

Between 20 October and 15 November the bombed carlines (representing 45 percent of the total mileage), and five out of 30 cars (all of which needs light repairs) will be completely repaired, along with track clearance by labor storm troopers between 20 October and 20 November, in order to operate 45 percent of 51 cars covering 2,000 kilometers per diem. When the war ends new cars will be imported by trade.

Survey of Stores  
(as of 30 October 1950)

<u>Location</u>	<u>Material</u>	<u>Type</u>	<u>Unit</u>	<u>Quantity</u>	<u>Remarks</u>
No. 489, Inhungni	Door knob			500	
"	Arbesto plate	80x40mm		10	
"	Twisted iron wire	2.6x7mm		1,500	
"	Bamboo broomstick			300	
"	Copper plate	80x60cm		4	
"	Poreelain insulator			500	
"	Tin		Kg	35	
"	(Babet' meter		"	10	
"	Lead		"	15	
"	Antimony		"	20	
"	Receiver	porcelain2		25	
"	Brass		\$	1	
"	Carbon brush	25HP		300	
"		35HP		500	
"	Capcon			100	
"	Ghue		Kg	20	
"	Insulating varnish		litre	1400	
"	Ihyue-umid'			5	
"	'Rues'		kwan	30	
"	Beater			100	
"	Hanger			300	
"	Spanner	7/8x1	kwan	10	
"	"	6/8x7/8	"	40	
"	Hanger		"	100	
"	High speed steel lm x 4		"	7	
"	Machine oil		D/M	1	
"	B grease		can	42	
"	Gear Grease		D/M	5	
"	Cement		\$	70	
"	Knob insulator			10	
"	Glass	90x60	box	8	
"	Iron plate	351.3mx5		2	
	Harddrawn copper wire	12 m/m		1,500	

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## How I'm feeling

Survey of electric car accidents (Aug. 25, 1925.)

From Planning Station Keweenaw  
To Houghtaling station 34 miles

For residential Park properties, see the Residential Park Properties section.

## Sec. 2. Electric vehicles

Cheney, et al., *Journal of Health Politics, Policy and Law*, 2003

Articles	Quantity	Remarks
Portable direct current voltmeter 500 V	1	Damaged and destroyed 199 Oct. 50
" " 500 V	1	"
" " 1000 V	1	"
separators	1	"
" direct current voltmeter 500 V	1	"
" Ohm's law panel voltmeter 1500 V	1	"
" Alternating current voltmeter 500 A	1	"
" Direct current wattmeter 100 A	1	"
" Pound meter	1	"
Megaphone 500 V	4	"
" 1000 V	1	"
Ground resistor	1	"

(No. 3) Working machinery

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## Survey of Equipment used in India

Electric Mill  
(medium size)

Reduced patches

## Portable windows

(including V) 2 two

- Grinde 1997 2 6

11. 61. 1000 8

Home Power Plants and Capacity (June 1950)

<u>Locations of Home Power Plants</u>	<u>Capacity</u>	<u>No. of Generator</u>	<u>Remarks</u>
1. Chöngjin Textile Mill	10,000	2	One being used
2. Chöngjin Iron Mill	5,000	3	under repair
3. Yöngan Chemical Factory	2,500	2	details unavailable
4. Hwanghae Iron Mill	6,000 1,000	1	
5. Pyöngyang Corn Products Fact.	1,500	1	
6. Pyöngyang Chemical Factory	6,250	1	
7. Madong Cement Factory	2,500	2	under repair
8. Haeju Cement Factory	10,000	3	Operation suspended
9. Sünghori Cement Factory	6,000 3,000	1	
10. Chönnnaeri Cement Factory	5,000	1	operation suspended
11. Komusan Cement Factory	4,500	1	being used

## Survey of Equipment at Home Power Plant, Korea corn Products Mill (as of November 1950)

## Generator

A.C. Generator Serial  
 K.W. 1500 R.P 75 percent Volt 480 Amp 2260  
 Cy 60 Co Ph3 R.P.M 3600  
 Temp Wire 60C and pall loos  
 Excitation 125 Volt 85 Amps  
 Aelis - Chalmers Manufacturing Co.  
 Mill werkes wis U.S.S.

## Motor

Steam Turbine U.S.S.

## Excitator

D.C. Generator 15 KW 125 Volt (Two excitation  
 One is run by steam engine, and one by electric motor).

## Attended Equipment (of electric motor)

Heavy oil pump	5 HP	one
Chimney dusting	60 HP	one
Lift pump	125 HP	one
Blower	25 HP	one
Stoker	25 HP	one
Drainage Pump	75 HP	one
Feed Pump	175 HP	one

## Transf

*prop 1-6*  
Transformers (evacuated)

500 KVA	3300V/440 - 480 V	Three
150 "	"	Three
125 "	"	Two

Type - boiler hoist coil (with two motors)

## General Condition

PAK Pong-nae This engineer, who has an experience of twenty years in operating generator above mentioned, is now maintaining his crew of 22 men and has finished overhaul. He is ready to make a test of the generator as soon as he will receive 300 KVA power, which is necessary to start moving it.

Generator . Up to 14 October, this generator was operated along with motor. An insulating test has proved of its possible operation since it keeps

2

Motor. Relay conductors, tumblings, etc., dismantled and hidden by the Reds, were recovered and repaired.

Excitator and parts. All intact.

Transformer. During Storage in bombshelter underground about 500 meters distant from the power plant, its insulating strength was weakened to a point of 10,000 but it is usable if properly dried and remantled.

Boiler. Completely overhauled. It was full of heavy oil ready for firing with pulverized coal, and the pulverizer was also in good condition.

Coal Supply Its own stock of pulverized coal, 70 tons, and the store of 5,000 tons at the Pyöngyang Chemical Factory will be sufficient for 100 day's use consuming 50 tons per diem. No return heat is available at the steam engine without a condenser, and per KWH consumption will be greater.

Transformer Oil. There was no stock at the Korean Corn Products Mill. Only two drums of OT was found at the Textile Mill, Six drums are necessary in order to run three 500 KVA. Therefore, four drums will be sought at the substations in the power transmission system.

Power Reception. In order to send electricity from Sadong (now generating power) to the Korea Corn Products Mill through power distribution line during the test period, assistance is being sought from the restoration squad of the City Power Distribution Office.

15326

Summary of estimated costs of fuel & power for October 1970  
for the U.S. Embassy, Teheran, Iran Office

## Kind

Budget rates for the month of October

Transportation 2,531,158.40 2,531,158.40

Gasoline rates 47,016.47 47,016.47 123,987.16

Electricity rates 47,875.00 47,875.00

Farmhouse rates 47,243.00 47,243.00

Industrial Electricity rates 47,243.00 47,243.00

Fuel oil rates 47,243.00 47,243.00

## Transportation

Total 47,243.00 47,243.00 1,193,405.56

## Fixed charges rates

Fuel with rates 457,367.40 457,367.40 457,367.40

Electric Large engine rates 259,283.00 47,875.00 307,158.00

Power

Tapping voltage rates 46,320.00 46,320.00 174,489.33

Water Small voltage rates 47,016.47 47,016.47 123,987.16

(Farmhouse) Large voltage rates 47,243.00 47,243.00

Combined power rates 292,158.00 292,158.00 1,193,405.56

Special power rates 24,606.00 24,606.00 98,432.00

## Machine rates

Total 672,158.00 1,352,438.00 3,156,224.00

## Fixed heat rates

Water heat rates 21,606.00 356,192.00 378,193.00

Electric electric fan rates 21,606.00 356,192.00 378,193.00

heat fixed iron rates 24,284.00 24,284.00

rates equipment rent 24,284.00 24,284.00

Machine rent 24,284.00 24,284.00

Total 21,606.00 380,781.00 402,387.00

1. Supply Work changes

26, 270

2635A

637  
156

1528

- 6 -

Suffolk - Suffolk, Boston, Mass.

1868

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*W. H. G. & Co.*

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and the following recommendations as of September 1, 1944.

## 64. *Umbelliferaceae*

Location	Elevation	Type	Unit	Distribution		Number of days
				Unit	Unit	
Chamorro Village	1000 m.	KI. 2	1	1000 ft. above sea level	1000 ft. below sea level	200
Yengnaypa	1000 m.	KI. 2	2	1000 ft. above sea level	1000 ft. below sea level	200
F. C. B.	2200 ft.	KI. 2	3	1000 ft. above sea level	1000 ft. below sea level	200
Atitlan	2000 ft.	KI. 2	4	1000 ft. above sea level	1000 ft. below sea level	200
Intercalation phase				1000 ft. above sea level	1000 ft. below sea level	200
Atitlan	2000 ft.	KI. 2	5	1000 ft. above sea level	1000 ft. below sea level	200
Atitlan	2000 ft.	KI. 2	6	1000 ft. above sea level	1000 ft. below sea level	200
Atitlan	2000 ft.	KI. 2	7	1000 ft. above sea level	1000 ft. below sea level	200
Atitlan	2000 ft.	KI. 2	8	1000 ft. above sea level	1000 ft. below sea level	200
Atitlan	2000 ft.	KI. 2	9	1000 ft. above sea level	1000 ft. below sea level	200
Atitlan	2000 ft.	KI. 2	10	1000 ft. above sea level	1000 ft. below sea level	200
Atitlan	2000 ft.	KI. 2	11	1000 ft. above sea level	1000 ft. below sea level	200
Atitlan	2000 ft.	KI. 2	12	1000 ft. above sea level	1000 ft. below sea level	200

Location	Relative Type	Distance from nearest town or station	Number of days to reach nearest town or station	Number of days to reach nearest station	Number of days to reach nearest station
Nanapar	Situated 3 km from Bhadrak	10 km	1	1	1
Substitution	Transferred	2 km from Bhadrak	1	1	1
Loktak	O.F.	5.7	4	Concentrated	2.5
Mop					15
P.T.	4.6 km		2	Agricultural Station 200 m	2
			1	Hills - 250 m (back)	12
O.L.P.		5	Concentrated	300	15
Tacka					
D.S.	Set	2	4	50	5
Transferred					
			1	Agricultural Station 150 m	30
					2

Evaluation of Instruments (As of October 1950)

Location	Voltage	Type	Estimation		Usable Number of days and Experience	Number of days required
			Unit	Capacity		
Chinnan	110 KV	Step-up	3	100 m	usable	60
Chinnan	110 KV	Step-down	3	100 m	usable	30
Substation	33 KV	Step-up	3	100 m	usable	60
Chinnan	33 KV	Step-down	3	100 m	usable	30
Substation	11 KV	Step-up	3	100 m	usable	60
Chinnan	11 KV	Step-down	3	100 m	usable	30
Substation	3 KV	Step-up	3	100 m	usable	60
Chinnan	3 KV	Step-down	3	100 m	usable	30
Substation	1 KV	Step-up	3	100 m	usable	60
Substation	1 KV	Step-down	3	100 m	usable	30
Wang-sha	110 KV	Step-up	3	100 m	usable	60
Wang-sha	110 KV	Step-down	3	100 m	usable	30
Ploughing	110 KV	Step-up	3	100 m	usable	60
Ploughing	110 KV	Step-down	3	100 m	usable	30
Kyung-ju	110 KV	Step-up	3	100 m	usable	60
Kyung-ju	110 KV	Step-down	3	100 m	usable	30
Ploughing	33 KV	Step-up	3	100 m	usable	60
Ploughing	33 KV	Step-down	3	100 m	usable	30
Substation	11 KV	Step-up	3	100 m	usable	60
Substation	11 KV	Step-down	3	100 m	usable	30
Substation	3 KV	Step-up	3	100 m	usable	60
Substation	3 KV	Step-down	3	100 m	usable	30
Substation	1 KV	Step-up	3	100 m	usable	60
Substation	1 KV	Step-down	3	100 m	usable	30
Kwang-yang	110 KV	Step-up	3	100 m	usable	60
Kwang-yang	110 KV	Step-down	3	100 m	usable	30
Substation	33 KV	Step-up	3	100 m	usable	60
Substation	33 KV	Step-down	3	100 m	usable	30
Substation	11 KV	Step-up	3	100 m	usable	60
Substation	11 KV	Step-down	3	100 m	usable	30
Substation	3 KV	Step-up	3	100 m	usable	60
Substation	3 KV	Step-down	3	100 m	usable	30
Substation	1 KV	Step-up	3	100 m	usable	60
Substation	1 KV	Step-down	3	100 m	usable	30
Öhori	110 KV	Step-up	3	100 m	usable	60
Öhori	110 KV	Step-down	3	100 m	usable	30
Öhori	33 KV	Step-up	3	100 m	usable	60
Öhori	33 KV	Step-down	3	100 m	usable	30
Öhori	11 KV	Step-up	3	100 m	usable	60
Öhori	11 KV	Step-down	3	100 m	usable	30
Öhori	3 KV	Step-up	3	100 m	usable	60
Öhori	3 KV	Step-down	3	100 m	usable	30
Öhori	1 KV	Step-up	3	100 m	usable	60
Öhori	1 KV	Step-down	3	100 m	usable	30

Evaluation of Instruments (As of October 1950)

At 1/2 Distillation.

Laying chemical factory

Location	Voltage	Type	Estimation		Usable Number of days and Experience	Number of days required
			Unit	Capacity		
Stockton	6/12 KV	Step-up	3	Flat Ground	usable	60
Stockton	6/12 KV	Step-down	3	100 m	usable	30
Ploughing	Single phase	Step-up	3	100 m	usable	60
Ploughing	Single phase	Step-down	3	100 m	usable	30
E.C.B.	6 KV	Step-up	1	100 m	"	20
E.C.B.	6 KV	Step-down	1	100 m	"	20
P.T.	6 KV/10 KV	Step-up	1	100 m	"	20
P.T.	6 KV/10 KV	Step-down	1	100 m	"	20
O.C.B.	11 KV	Step-up	1	100 m	"	40
O.C.B.	11 KV	Step-down	1	100 m	"	5
C.T.	6 KV	Step-up	2	150 m	"	30
C.T.	6 KV	Step-down	2	150 m	"	5

Evacuation of Instruments as of October 1950  
Kangchenjunga

Location	Article / Capacity	Worth	Usable	Size	Weight	Notes
Kungsöfj. Skerf- myren, Kungsöfj. 3000 m²	66KV/33KV 3000 x 600	3	" Usable	580	30	
"	66KV/33KV 3000 x 600	3	" "	1600	15	
"	66KV/33KV 3000 x 600	3	Worthless	300	30	1600
"	66KV/33KV 3000 x 600	1	Worthless	100	30	1600
"	66KV/33KV 3000 x 600	1	Worthless	100	30	1600

Excerpt from a letter dated October 17, 1900

		Almond orchard, 1/2 acre, 1000 ft. elevation	
Locality	Billingham Valley, 1000 ft.	Soil	Soil
	81°	Soil	Soil
Hadaduri	Fir forest 5200	3	30% Bush curly, wavy florbank
Clinanamp	forests scrub	phase	15 20% 14 pieces usable the strongest

## Evacuation of the dormitory - 23 October 1985

Location	Articles	Capacity (lit)	Quantity	Description	Usable number of and capacity of restoration	Number of usable tanks	Sup required
Mudbank	Barrel	3500	0	300 m <sup>3</sup>	usable	300	5
Chinampas	"	1250	1	400 m <sup>3</sup>	usable	500	10
"	"	9550	1	150 m <sup>3</sup>	usable	200	5
"	"	3600	1	150 m <sup>3</sup>	usable	200	5
Mexico City	Barrel	3500	2	150 m <sup>3</sup>	"	400	10
"	"	3600	1	150 m <sup>3</sup>	"	200	5
"	Barrel	3500	2	200 m <sup>3</sup>	"	100	5

Remarks: Except Pottery all were buried.

Evacuation of Instruments 20 October 1950 160 →  
 (Chinnarip Glass factory information)

Location: village directly behind factory and distance measurable by road required

Mazalli,	1000	1	full	1000	25	3
Chinnarip						
"	1000	2	1000	1000	25	5
"	1000	3	1000	1000	25	5
"	1000	4	1000	1000	25	5
"	1000	5	1000	1000	25	5
"	1000	6	1000	1000	25	5
"	1000	7	1000	1000	25	5
"	1000	8	1000	1000	25	5
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"	1000	99	1000	1000	25	5
"	1000	100	1000	1000	25	5

Evacuation of Instruments 20 October 1950 160 →  
 (Chinnarip Soda factory information)

Location: village directly behind factory and distance measurable by road required

Tohangni,	1000	1	1000	1000	25	7
Chinnarip						
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④  
Ordinance No. 7  
Ministry of Industry  
Approved by KIM Il-sōng, Cabinet Premier,  
The Democratic People's Republic of Korea

Regulations  
governing  
Supply and Demand of  
Electricity

The Pyongyang Power Distribution Office

Ordinance No. 7  
 Ministry of Industry  
 Approved by KIM Il-söng, Cabinet Premier,  
 The Democratic People's Republic of Korea

Regulations governing Supply and Demand of Electricity.

Chapter I. (General Provisions

Article I. The supply and demand of electricity shall be governed in accordance with the present regulations. The supply organs referred to in the present regulations indicate all national organs for distribution of electricity, and the users referred thereto indicate all organs, bodies, enterprises, and individuals who consume electricity.

Article II. The supply and demand of electricity shall be limited by the following kinds and standards, provided that different standards may be applied in special cases.

<u>System/kind of Electric supply</u>	<u>Electric Light</u>	<u>Electric Power</u>	<u>Electric Heat</u>
Electric System	Two-wire system, Three-wire system, Two-wire system, alternative current	alternative current rent three phase rent, Single phase.	alternative current rent, Single phase
Frequency	60 cycles	60 cycles	60 cycles
		Low voltage 220V High " 3,300V 11,000V	
Voltage	100 Volt	22,000V 44,000V 66,000V 154,000V 220,000V	100V
Supply Hours	Day or night	Day and night	Day and night

The voltages may, at the places of supply, be regulated up to 5 percent for light, and 10 percent for power and heat.

The supply organs, when deemed it necessary to overhaul or repair machines and electric lines, may suspend the daytime supply not more than two days per month. In the above case, the supply organs shall give a previous notice to the users within twenty four hours through newspapers, radios, and other information media or telephones, provided that the same notice may be omitted for the users of electric light.

Article III. The supply organs shall give a full information to the users about the regulations governing supply and demand of electricity, and shall post up explanatory bills on the bulletin board at their business houses at all times.

#### Chapter II. Process of Supply and Demand

Article IV. Those who wish to use electricity shall apply to a supply organ in accordance with a prescribed form by stating thereon kind, use, capacity, number of lamps, and place of use. The same rule shall apply when any change or cut is made wholly or in part at the using categories.

Article V. The Supply organ shall, within ten days of receipt of the foregoing application, serve a notice to the applicant, informing its decision for or against his application.

Article VI. The supply organ shall provide electricity only when the following conditions are fulfilled and when it can satisfy the demand.

1. When the user will observe laws and regulations governing supply and demand of electricity.
2. When the electrical equipment and machines at the place of use are complete and in good order.

3. When the approval of the Director of power control Bureau, Ministry of Industry, has been obtained for the use of electricity above 50 kilowatts.

Article VII. When a change is made in users at a place of use one account of removal, transfer of any other reasons, the new user shall succeed to all rights and duties of the former user in the use of electricity. In the above case, the new user shall file a declaration with the supply organ without delay.

Chapter III. Installation and Repair of Electrical Structures

Article VIII. The installation, maintenance, and repair of distributing line (including transformer) and branch line leading to the place of use shall be borne by the supply organ. When a speical installation or a large expense is required on account of the actual condition or any other reason, the user may be charged for such expense in full or in part. In such a case the equipment shall be owned by the supply organ.

Article IX. The installation, maintenance, and repair of electrical apparatus and electrical instruments inside the place of use shall be performed by the supply organ at the expense of the user.

Article X. The user may, with the permit of the Minister of Industry, install electrical apparatus for home use at his own expense, and shall repair his own equipment so that the general supply of electricity may not be interrupted.

Article XI. The new installation or change of watt-hour meter inside the place of use shall be performed by the supply organ by kind of supply, ie., lamp, power, and heat.

Article XII. The user may not employ any electrical instruments which have not been tested or authorized by the Ministry of Industry. The supply organ may, during supplying electricity, test electrical apparatus and electrical instruments any time at the place of use, and if necessary, seal the current limiter or electrical instruments.

Article XIII. The supply organ, when deemed it necessary on security reasons, may order change, repair, special installation, or dismantling of electrical apparatus and electrical instruments in the ownership of the user. In such a case the working expense shall be borne by the user.

Article XIV. The user, when perceived his electrical apparatus in bad conditions, shall immediately inform the supply organ. On being informed off the case the supply organ shall overhaul the apparatus in question within three hours in cities and twelve hours in other places.

Article XV. The user, when wishing erection, addition, change, or repair of structures directly affecting his electrical apparatus, shall inform the supply organ in advance.

Article XVI. When the user intentionally or through neglect damaged or lost any electrical apparatus or electrical instruments in the ownership of the supply organ, he shall bear the responsibility of compensation.

#### Chapter IV. Method of Supply

Article XVII. Lamp light shall be supplied by three kinds as follows:

1. Fixed - rate lamp light to a place using less than 30 lamps for a fixed amount of rates on the basis of candle-power per lamp.
2. Meter-rate lamp light to a place using more than five lamps for amounts charged on the basis of number of lamps and wattage used, provided when deemed necessary, light may be supplied for meter rates to a place using less than five lamps.
3. Temporary lamp light to a place using light continually for a period less than one month on the basis of a fixed amount or meter rates.

Article XVIII. The lamp light for illumination may not be supplied during daytime, unless deemed necessary for work or for the actual condition of the place of use.

Article XIX. The user of lamp light may additionally use radio, electric clock, or home iron (below 500 W.) with the permit of the supply organ.

Article XX. Power shall be supplied by three kinds as follows:

1. Permanent power shall be supplied to those who continually use electric power for a period more than three months by meter system on the basis of contract capacity.
2. Temporary power shall be supplied to those who continually use electric power for a period less than three months according to the method of supply as in the case of permanent power.
3. Summertime power shall be supplied to irrigation, pumping, and other farming activities, if summer time uses only according to the method of supply as in the case of permanent power.

- Article XXI. The electricity supplied as power shall not be used for lighting or heating provided that a proprietor of an electrical apparatus may use it for lighting in workshop and office of production
- Article XXII. The contract capacity of power shall be equal to the gross capacity of electrical equipment inside the place of use provided that in case of using a private transformer it shall be equal to the larger capacity of the transformer or the equipment. When the equipment capacity is marked with HP or KVA, it shall be counted as 1 KW for 1 HP or 1 KVA. When a figure in the gross capacity is less than 1 KW, it shall be counted as 1 KW. In the supply of more than 50 KW, a maximum contract capacity may be arranged regardless of the equipment capacity.
- Article XXIII. The method of supply of electric heat shall follow the meter system on the basis of contract capacity.
- Article XXIV. The electricity supplied as heat shall not be used for lighting.
- Article XXV. The contract capacity of electric heat shall be determined on the basis of the gross equipment capacity as follows provided that in case of using a private transformer, it shall be determined according to the larger capacity of the transformer or the equipment.
1. Current limiter.
  2. Maximum capacity of instruments with one socket.
  3. Largest capacity among instruments used with more than two sockets. When a figure less than 1 KW. appears in the aggregate gross capacity, it shall be counted as 1 KW.

Article XXVI. The actual maximum wattage of power and heat shall be determined according to the hourly or half-hourly indicator of the watt-hour meter, the largest wattage of a month or a given period being the largest power of the same month or the same period.

Article XXVII. The users of electric power and electric heat shall always maintain an equilibrium of burden among power and phases used at the place of use, and keep the moment of force at over 85 percent.

Article XXVIII. The proprietor of electrical structures for home use shall enter a clear record of necessary items concerning power supply by keeping a diary in a prescribed form, and he shall produce the same record or send its copies whenever is required by the supply organ.

Chapter V. Limitation, Cut, and Suspension of Supply

Article XXIX. A user, corresponding to one of the following categories, shall have his power supply at or limited by the supply organ.

1. When ordered by law and ordinance, Cabinet decision, or directive of the Minister of Industry.
2. When compelled by natural calamity or other force majeur.
3. When threatened with possible breakdown of electrical structures, or necessary for their repair, change, overhaul, etc.,
4. When necessary for security

Article XXX. A user, corresponding to one of the following categories, shall have his power supply suspended or rejected by the supply organ.

1. Violating laws and ordinances, decisions and directives governing electrical industry.
2. Stealing and misusing of electricity.
3. Delaying payments of electric rates and dues.
4. Damaging the supply organ by breakdown or loss of electrical structures in the ownership of the supply organ, or by improper use of electricity, through design or grievous error.
5. Using electricity, or refusing inspection of electrical apparatus, contrary to the provisions of Articles XII and XXXII.
6. Nonfulfilling order of Article XIII.
7. Disregarding the notice of Article XV.
8. Neglecting recording required by Article XXVIII, or entering a false record.

Article XXXI. Although damage is incurred by a user due to limitation, cut, suspension, or rejection of current supply in accordance with the two foregoing Articles, the supply organ may not be responsible for compensation

#### Chapter VI. Control on Steel and Misuse of Electricity.

Article XXXII. The supply organ, in order to keep steal and misuse of electricity under control, may inspect the condition of using of electricity at any time.

Article XXXIII. When a user has committed one of the following

, acts without permission in the use of electricity,  
he shall be regarded as having stolen and  
misused electricity.

1. New installation, addition, or use of electricity exceeding the contract capacity.
2. Lighting night-lamps on daytime.
3. Using electricity for purposes and at places other than those apporved or authorized.
4. Illegal use of meter-apparatus by change thereof.
5. Use of unauthorized instruments.

Article XXXIV. When the fact of steal or misuse is correspoiding to one of the following items, the user may become object of suspension or rejection of supply for a period not exceeding three months in accordance with Article XXX. When the circumstance is of moment, it shall be dealt with by legal procedures.

1. Illegal use of electricity by change of a meter apparatus.
2. New installation or addition of power machines.
3. New installation or addition of electrified rooms(ondol).
4. New installation or addition of electrical heat.
5. New installation of two or more lamps, or addition of three or more lamps.
6. Use of unauthorized instruments

7. Repeated acts of offence.

Article XXXV. When an electrical equipment or instrument has been damaged in the act of stealing, or lost due to steal or misuse, an expense covering the complete restoration of the same shall be collected.

Article XXXVI. All instruments which have been stolen or misused shall be seized.

Chapter VII. Electric Rates

Article XXXVII. The electric rates shall be charged according to sealing prices fixed by the State.

Article XXXVIII. The user shall pay on demand the following electric rates at a place or to a person designated by the supply organ.

1. Fixed electric rates

A fixed amount of electric rates, covering one month or several months, shall be collected in advance by counting a calendar month as one month.

2. Meter rates

A total amount of the monthly basic rates and the meter rates for wattage used shall be collected monthly as the electric rates covering the given month by counting a calendar month as one month. The meter-rates shall be calculated by the wattage used between the days of inspection in the previous month and in the current month.

The basic rates shall be paid although current was not used.

Unless otherwise provided for, the calculation of electric rates shall be performed by the unit of watt-hour meter.

3. Temporary power rates

When current is supplied by a fixed amount system, such amount of rafes shall be paid in advance; and when by meter system a prepayment of an estimated amount, shall be made to be settled with an accurate account on finishing the use of electricity,

4. All fees and sundry working expenses shall be collected on each particular occasion.

Article XXXIX. When the number of days using the current is less than a full month under the system of monthly payment of fixed rates, the payment forthat month shall be calculated as follows:

When current was used for less than 15 days, it shall be determined as a half months payment; and when current was used for more than 16 days, it is a full month's payment.

Article XL. When an accurate inspection of the meter is impossible due to breakdown of the watt-hour meter, the wattage used shall be determined by the larger amount of the average power used during the preceding three months before the period of that account and the actual results of the corresponding month in the preceding year. When there is a marked difference in the percentages of burden. The amount shall be

figured out by taking the equipment at the place of use and the condition of use into consideration.

Article XLI. When the fact of steal or misuse of current is confirmed, the rates unpaid due to that fact shall be collected as follows:

1. Wattage stolen

It shall be figured out by multiplying the capacity stolen with the hours used according to the following standard:

(1) Home use

Electric lamp	Daily standard hours used	14 hours
Radio	"	7 "
Electric heat	"	6 "
Electrified room	" (ondol)	24 "

(2) Industrial use

The number of hours used shall be figured out by taking the working hours and the use of current into consideration;

(3) When, in the course of illegal use of current of by change of meter apparatus, the wattage used is not clear, it shall be regarded as having used the total apparatus 24 hours per day.

(4) When the period of steal and misuse is not clear, it shall be determined as six months.

2. Rates on steal

An amount not exceeding five times the maximum amount of electric rates of the same kind shall be collected as rates on wattage stolen.

Article XLII. The basic rates of power for summer use shall be collected in the amount corresponding to three months' rates when the period of use is less than three months.

Article XLIII. For private users inside the electrical structures, the ordinary rates shall be applied to electric lamps and electric heat used at their attached homes outside the places provided for in Article XXI.

Article XLIV. When a user delayed payment of rates, he shall pay arrears which is to be figured out from the fifty day after the request for payment in accordance with Article XXXVIII.

Article XLV. When the supply of current, provided for in Article XXIX, stopped more than 24 hours continually, the basic amount of fixed electric rates and meter rates shall be deducted from the rates of that month by adding up the number of corresponding days. In this case, one month shall be counted as 30 days, and the fraction amount of less than one 'chön' shall be counted as one 'chön' when the fraction is more than .5, and cut away when less.

Article XLVI. When the tariff change after the rates have been figured out, an accurate settlement shall be made at the time of the next calculation.

Article XLVII. The supply organ may demand the user to offer a guarantor or a sum of guarantee money when necessary.

Supplementary Rules. The present regulations shall become effective from 1 January 1949,  
The existing users at the time of enforcement of the present regulations shall be regarded as having applied for the supply of electricity.

Pyongyang  
29 December 1948 -174-

KIM Ch'aek  
Minister of Industry the Democratic  
People's Republic of Korea

## ELECTRIC TARIFF

<u>Kind</u>	<u>Item</u>	<u>New rates</u>	<u>Old rates</u>
Fixed rate lamp	per lamp per month		
"	(12.5W)	700	
"	(20 W)	800	
"	(30 W)	900	
"	(40 W)	1000	
"	(60 W)	1500	
"	(100W)	2500	
Meter lamp	basic rates (per lamp per month)	3250	250
"	power rates (1 KW H)	150	200
Temporary lamp	per lamp per day (20W or less)	150	
"	(40W ") )	200	
"	(60W " )	300	
"	(100W " )	400	
Power	basic rates		
"	(From 1 KW up to 50 KW per month)	5000	3000
"	( " 50 " 100 " )	3000	700
"	( " 100 " 200 " )	1500	600
"	( " 200 " 350 " )	1000	550
"	( " 350 " 500 " )	1000	500
"	( " 500 " 750 " )	700	450
"	( " 750 " 1000 " )	700	400
"	( " 1000 " 2000 " )	600	350
"	( " 2000 " 3500 " )	500	300
"	( " 3500 " 5000 " )	500	250
"	( " 5000 " 10,000 " )	400	
"	(above 1,000,000 KW " )	300	
"	power rates		
"	(from 1 KWH up to 2500 KWH per month)	20	
"	( " 25,000 " 50,000 " )	12	
"	( " 50,000 " 100,000 " )	.08	.09
"	(( " 100,000 " 200,000 " )	.06	.07
"	( " 200,000 " 500,000 " )	.05	.06
"	( " 500,000 " 1,000,000 " )	.04	.05
"	(above 1,000,000 KWH " )	.03	.04
Temporary power, adding 50 percent of ordinary rates up to one month.			
"	30 "		two months.
"	20 "		three months.
	Equal to ordinary rates above three months.		
Electric heat, basic rates (MP 1 KW per month)	1000	500	
" " (KWH " )	100	50	
Fixed rate radio per set per month	500	500	
" iron " (home use only)	1000	1000	
" clock "	500	500	
Fee Location of side-line, lamplight, and heat per side-line 1 [ ]	2000	3000	
" power " cost price			
Installation, dismantling, and changing location of meter.			
low voltage	2000	3000	
high voltage	6000	5000	

Fee	Installation, dismantling, changing location of lamp and heat		
	per lamp & per iron	2000	2000
Cutting and reinstalling fee (lamp) per case	1000	cost price	
" (power)	"	10000	10,000
" (heat)	"	2000	6,000
Test Fee (lamp light and heat) per lamp	2000	2,000	
Installation of motor, transformer, and distributing line			
per piece per case	low voltage	6000	6,000
"	high voltage	10000	10,000
Gas	per socket per month	200	
"	" three months	160	